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DISEASES OF WOMEN.

BY

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Dedicated to

THOMAS SPENCER WELLS,

IN ADMIRATION OF THE BRILLIANT WORK

BY WHICH THE ART OF SURGERY

HAS BEEN ENABLED MATERIALLY TO PROLONG

HUMAN LIFE.

PREFACE.

Although Gynæcology has engaged the attention of many very able writers, it must be admitted that there is within its scope a great deal upon which our information is still far from being either complete or accurate. I must plead, therefore, that any new effort to extend our acquaintance with the special Diseases of Women deserves at least to be received with patience.

Concerning some of these diseases I have ventured to advance new views, both of their pathology and their treatment, and towards these criticism may fairly be directed; but I can claim for most of them that they have already been published in the form of occasional papers, and have been well received by those whose opinions are of the greatest value.

My chief object in this book has been to offer the results of my own experience in as condensed a form as possible; and I have therefore avoided, as far as I could, long quotations, needless references, and detailed accounts of cases. I have also refrained from introducing illustrations of pathological appearances, for I have rarely found them to convey any very intelligible idea of the facts, unless in the form of costly lithographs; and the use of these would have greatly enhanced the cost of the book, without giving a corresponding increase to its value. The chapter on Diseases of the Ovary is an enlargement of my Hastings Essay of 1873.

My heartiest thanks are due to my friend Dr. Hickinbotham for his assistance in seeing the book through the press.

Birmingham,
April, 1877.

PATHOLOGY OF THE FEMALE GENERATIVE ORGANS.

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- Labia Minora.
- Hymen and Carunculæ Myrtiformes.
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DISEASES OF WOMEN.

I.—MONS VENERIS.

Eruptions and Parasites.

Although for purposes of convenience I have separated this region from the rest of the external genitals, it must be understood that very much of what I have to say of it applies equally to the rest of these organs, and the same may be said conversely.

Pityriasis versicolor.—Though this is a perfectly harmless eruption, it often gives rise to great uneasiness in the mind of the patient, from the suspicion of its syphilitic origin. It is rarely found to be confined to the genitals, though I have seen it distributed there only, spreading over the mons, labia, and symmetrically over the groins. It is of a reddish brown color, the brown tone prevailing when it is chronic and has been neglected. It is slightly raised above the level of the healthy skin, especially at its advancing margins. It is not scaly; but if the spots be scraped it will be found that the epithelium is more readily removed from them than it is from the healthy skin. If the scrapings be treated with liquor potassæ and examined under the microscope with a power of about 250 diameters, the characteristic *racemous conidia* of the *microsporon furfur* will render the diagnosis certain.

The presence of this eruption usually gives rise to no discomfort, and unless the patient is attentive to cleanliness it may exist without her knowledge. Frequent baths, with a liberal use of soap, and the application, after the skin has been well rubbed with a rough towel, of a lotion of twelve grammes of sodium hyposulphite to a litre of water, will soon effect a cure.

Alopecia.—The hair on the genitals may be removed by the same diseases which destroy it on other parts of the body. These are of two

kinds, the first of which is the *alopecia areata* of the old writers, which removes the hair in patches. It is said by some authorities to be due to the presence of a fungoid parasite, the *microsporon Audouini*, but this has been contested by equally weighty opinions. Whether any of these skin eruptions depend for their existence on the parasites which are found in association with them is as yet quite an open question. In the present case I think it more likely that the parasite is a coincidence, and due merely to the presence of disintegrating material which acts as a nidus for the spores. The peculiar distribution of the patches, and the severe neuralgic pain which accompanies and often precedes their appearance, make it more likely that they depend upon some neurosis. I have never seen this form of baldness attack the genitals only.

The other disease by which hair is removed is essentially some error of nutrition of the hair bulbs, for it removes the hairs slowly and uniformly by gradually thinning them out. I have seen it attack the whole surface of the body and remove every hair. I have also seen it attack certain regions only, as the scalp and genitals, whilst it left the hair in the armpits. It often dates from first labors.

In the first variety, recovery occasionally takes place and the hair is restored, but I never heard of such an ending to the second form. I do not know of any treatment which seems to have done good, though parasiticides, such as mercuric perchloride, are recommended by many dermatologists.

Lichen simplex.—This consists of a punctate eruption, which is generally pretty diffusely spread over the body; but it is not unusual for the gynæcologist to be consulted about an eruption on the genitals, of an anomalous kind, which a little careful inspection will show to be an altered lichen.

The alteration is due to the fact that the presence of any kind of eruption on the genitals of women is almost sure to be the source of so much irritation that relief is sought by scratching. The abrasions which result cause the papules to become pustules, so that what was originally simple lichen may appear like acne or even furunculus.

It must be held as a rule, therefore, to examine carefully the skin elsewhere in all cases of eruption on the genitals, before any opinion is expressed or any treatment advised.

This itching is a most distressing symptom, and it is generally the reason why medical assistance is sought. For its relief nothing is so essential as dryness; and the repeated use of puff powder is often sufficient alone to allay the irritation, and the addition of morphia or acetate of lead to the puff may prove of great service. If this fail, sponging the parts with a lotion of carbolic acid as strong as can be borne, and gradually increasing the strength of it, followed by puffing, will almost always succeed. For the general constitutional treatment, large doses of potassium acetate, colchicum and arsenic, are the most potent remedies.

Lichen syphiliticus.—This, like almost all other syphilitic eruptions, is found on the genitals; but not there only, so that it need hardly here engage our attention.

Eczema.—This is perhaps the most common form of skin disease met with on the genitals of women, whether in association with its simultaneous occurrence elsewhere on the body, or on the special organs only. It is seen in both its varieties, of E. simplex and E. rubrum; but after it has been in existence for a short time, these distinctions cease to be possible, on account of the alterations induced by scratching. I am quite certain

that no disease to which the human body is subject, and which does not threaten life, succeeds in making its victim more utterly wretched than chronic eczema of the genitals.

I have seldom met with it in women not past the prime of life, and it is most frequently seen in those who have reached the climacteric period.

When found on the mons, it has generally spread upwards from the labia, whence it will also be found to have extended over the folds of the groins to the thigh. Its most constant seat is on the inner surfaces of the labia.

It is rarely seen in its earlier stage, when vesicles are present; but when the patient, usually after long suffering, comes for advice, the whole organs are found red, hard, swollen, extremely painful, and exuding a large quantity of sero-purulent fluid. The distress is always increased by warmth in bed; so much so, indeed, that I have known a patient who habitually slept in a chair, with the genitals exposed to the air, that being the only position in which sleep could be obtained.

I shall refer to this disease at greater length when speaking of the labia, and until then I shall defer the consideration of the other skin diseases, with the exception of the two parasitic forms.

Scabies.—I have seen one well-marked instance of the ravages of the *acarus scabiei* upon the mons, thighs, and lower part of the abdomen, to which regions they seemed to have been transferred from the patient's hands. In this case, treatment had been given at various institutions without benefit, and probably because the hands had not been examined, and therefore the real nature of the eruption, which looked like *impetigo*, had not been suspected. A liberal supply of sulphur ointment brought immediate relief.

Pediculus pubis.—The effects of this parasite are not seen, in women, outside hospital practice; and usually they are sufficiently well known amongst the class of women whom they infect, as not to be frequently seen even in hospitals. Occasionally, however, a young woman presents herself with a large crop of papules and pustules over the genitals, chiefly on the pubis, and the skin well marked with scratches. The suffering which these animals induce is often intense. The age of the patient is a very important matter in this case; for though they do occur in women advanced in life, they are far more common in young women. An eruption on the genitals of a young woman ought at once therefore to excite a suspicion of the presence of lice, and from their large size and dark color they are easily found. One or two are quite enough to account for a very abundant eruption. The popular remedy for them is mercurial ointment, but a much safer one is a five per cent. solution of carbolic acid, a remedy which no parasite can resist. So much is this the case, that it is almost a rule with me to begin the treatment of all eruptions on the genitals of women with its employment for a week or two; for there is really no kind of eruption which may not depend upon, or at any rate favor, the presence of pediculi; and the result of their presence is sometimes so identical with the appearances of chronic eczema, that the most experienced eye may be deceived.

Sometimes in old women an anomalous papular eruption present on the whole of the trunk and accompanied by itching, most intense on the genitals, will be found to be due to presence of body lice. It will be readily cured by a carbolic acid lotion.

Inflammations and Ulcerations.

The mons veneris may be involved in any inflammatory attack which spreads from the abdominal parietes or from the vulva. Thus I have seen it included in the erythematous ring of an exceptionally severe gonorrhœa; and I have also seen it the seat of very severe erysipelas, which had spread over the abdomen from a wound on the crest of the ilium, the result of a blow.

It is also the seat of chronic inflammation in cases of ectopia vesicæ, from the constant dribbling of the urine over it.

In cases where the external genitals are involved in the inflammatory process, there is always an amount of œdema greater than is seen elsewhere in the skin, except the eyelids.

In a case which I saw in consultation with my friend Mr. A. P. Evans, of West Bromwich, in February, 1875, I found the mons and the contiguous skin to be the seat of chronic inflammation which covered a diffuse abscess. This abscess had one opening into the bladder, and another out at the umbilicus. I made an opening through the skin of the mons, and passed a drainage-tube out at the umbilicus. This had the effect of closing the opening in the bladder, but that at the umbilicus still remains.

I have also seen the mons the seat of a well-marked carbuncle.

Sometimes a primary syphilitic sore is found in this region, an experience which I have twice had in hospital practice, in both cases the virus having probably infected previous abrasions due to scratching. Such a seat of infection is more common in the male, but its possibility in women must be borne in mind. Secondary specific ulcerations, in the form of suppurating gummatous patches, are frequently to be met with here ; and in one case recently I saw such a patch occupying the whole cavity of the umbilical depression, whilst the whole skin in the neighborhood of the vulva was literally covered with similar formations, which extended down the thighs and over the mons veneris.

Another form of syphilitic disease also found here is the tertiary indurated hypertrophy, a remarkable case of which I shall describe at length when speaking of the diseases of the labia. Sometimes this growth is so large as almost to constitute a tumor.

Tumors.

Besides simple œdema and the induration already spoken of, the mons may be the seat of tumors. The most common of these is the simple adipose hypertrophy which accompanies general abdominal obesity. This sometimes attains such magnitude as to be a source of great discomfort to the patient; for the fold of fat hanging down retains the secretion of the skin in the wrinkles, and gives rise to painful excoriations. In such cases, rigid attention to cleanliness and the liberal use of puff powder are requisite.

I have also seen an encysted lipoma of considerable size removed from the mons; and in several instances I have seen hæmatomata, resulting from the brutal treatment of women by men of the lower orders kicking them over the genitals.

The mons may also be invaded by the extension over it of epithelial cancer; and though I have never heard of the disease originating there, it is possible it may do so occasionally.

Congenital Malformations.

These are almost entirely confined to defective development in cases of fissure of the pubic and hypogastric regions. This condition is generally associated with other more important malformations, as ectopia vesicæ, the existence of a cloaca, &c. The pubic bones are insufficiently developed, being widely apart in front, no synchondrosis having been formed, and a slender ligament alone representing what ought to have been a firm bony arch. The labia majora and minora are separated and have no anterior commissure. The vagina is generally closed, and both uterus and ovaries absent, or indicated only by rudimentary structures. Fortunately, only few infants suffering from such deformities ever reach maturity, though some of them have to endure their miseries to an extreme old age.

II.—THE VULVA: Labia Majora.

Eruptions and Parasites.

Aphtha.—An unusual but a very distinct form of eruption consists of aphthous patches on the vaginal mucous surface. In the acute form I have never seen it in adults, but I did once in a child about six years of age, where the appearances were identical with those seen in the mouths of children. But in the chronic form the disease is not at all uncommon, and is a source of great irritation. The vulva generally is reddened; and if the inner surfaces of the labia be examined, small dry spots are seen elevated above the surface and of a white color, the color being due to altered epithelium, which may be scraped off without abrading the surface; and amongst the cells the spores and hyphæ of a fungus will be found. A lotion containing sodium hyposulphite is an unfailing remedy.

Eczema.—I have already spoken of this disease as affecting the mons, but when it does so it is generally as an extension upwards of the disease from the labia. In the few cases where I have seen the disease in an early stage, I have found it in all to begin on the inner surface of the labia. The discharge between them is increased in quantity, and the usual itching is complained of. When they are separated and the inner surface examined, it will be found covered with small vesicles and abrasions, and no eruption will be found elsewhere on the genitals. But when the cases are

seen in a far advanced stage, the mucous surfaces of the labia are found rather dry than otherwise, with the epithelium thick, white, and sodden, especially at the anterior commissure where the chief distress lies. The labia are hard, red, fissured, and swollen, and the disease may extend back round the anus, into the folds of the groins, and up over the mons on to the abdomen. Painful fissures exist at the anus, and are the cause of great exacerbation of the patient's sufferings. The disease is due to chronic inflammation of the dermal papillæ, and is of a most intractable character. The utter wretchedness to which it sometimes reduces the sufferer is not greater in any other disease known to me. I have heard of one lady who, having failed to obtain relief at the hands of a large number of practitioners of various kinds, deliberately ended her misery by suicide as her last and only resource.

For the cure of this disease, it is first of all necessary to determine that it is not due to some removable cause, such as the presence of parasites, or of some irritating discharge from the vagina. I have repeatedly cured patients of chronic eczema of the genitals by first curing the patient of a chronic endometritis. For its general treatment the dermatologists depend chiefly upon arsenic, but I must say that I have not often seen very convincing proof of its power. In elderly women the disease seems to be sometimes the expression of a gouty diathesis; and in these cases, colchicum and acetate of potash, continued perseveringly for some months, has, in my experience, relieved one or two very bad cases. But under all circumstances, the disease, even if cured, has a most inveterate tendency to return. The waters of Vichy, Aachen, Harrogate, Askern, and Strathpeffer, are all said to afford relief. Local applications are very often useful in at least relieving the horrible itching; but what suits one case may be useless in another. Thus I have seen a patient to whom the cold spritze bath always gave complete relief for a day or two ; and another, whose only solace was puff powder. A simple cerate, goulard water, or an opiate fomentation, may be of service to some ; whilst to others the application of Huile de Cade, or Vlemminkx's solution may be best. The most generally useful applications, however, I have found to be strong carbolic acid and a concentrated solution of acetate of lead in glycerine. The first of these must be used cautiously, and not over a large surface at one time, or it must be used by gradually increasing the strength of the solution. It seems to have a remarkable power as a local anæsthetic, and I have repeatedly seen one application of it completely relieve the patient for some weeks. If I think it desirable to apply it widely, or in a concentrated form, I always place the patient under an anæsthetic.

In one case in my practice, where the disease was probably the expression of some dyscrasy, such as chronic gout, it was completely cured by the insertion of a seton just above the groin; but when the seton was removed the disease returned. The patient greatly preferred the inconvenience of the seton to the misery of the eczema.

The disease known as prurigo senilis is one which seems to exist only on paper, as those cases answering its description which have fallen under my notice have always been explicable upon some better pathological basis than is supposed by this title.

Herpes.—The only form of herpetic eruption which I have seen on the genitals is the ordinary shingles or herpes zoster. More than once I have seen this disease course over the crest of the ilium, and end in a sort of inflorescence on the labium of the same side. Women seem to be more subject to herpes zoster than men are, and they are greatly troubled

with the acute pain over the course of the nerve, which sometimes continues for weeks after the eruption has faded. The hypodermic injection of morphia relieves this pain at once, and in some instances permanently. The local application of liniments containing opium are also useful.

This disease is really an exanthem, and is accompanied by febrile symptoms, which are occasionally quite severe.

Its local appearances are due to some condition of the nerve, leading to papillary inflammation of the skin, and the nerves affected are probably the paretic nerves of the blood-vessels.

Acne is a very common and an exceedingly troublesome disease of the external genitals; and as the inevitable itching causes the patient to scratch, it is often very difficult to say whether the case is one of mere lichen, or acne, or even of furunculus. Undoubted acne is generally met with in unhealthy women about the climacteric time of life, and from whose vaginæ some chronic discharge has flown for years. The patients are generally otherwise out of health, suffering from gastric and hepatic disturbance, not unusually are given to over-indulgence in stimulants, and are inattentive to cleanliness. The spots are usually of small size save on the very margin of the labia, where they generally appear as large boils of a very painful character. The eruption often extends upwards over the abdominal surface.

The cure is to be obtained by attention to the cause of the discharge, and to the employment of such remedies, hygienic as well as therapeutic, as will improve the general health.

Furunculus.—This eruption, besides being met with as a development of acne, occurs independently as large boils on the labia. The cause of these I have very often found to be the poisoning of the socket from which a hair has been pulled, by the acrid discharge. The hair on both the male and female genitals is a fertile source of mischief, hitherto but little suspected. I have seen a chancre result from the engraftment of the poison on a cut on the glans penis, which had been caused by a hair.

In a woman with a chronic purulent discharge, the hair on the labia gets matted together, some hairs get pulled out, and the wounds, being inoculated with the purulent discharge, become small infective abscesses. I have repeatedly cured recurrent furunculus by directing the hair on the genitals to be kept short; and I am quite satisfied that venereal diseases might be entirely stamped out by a more scrupulous attention to the toilet of the genitals.

Warts.—These growths are sometimes congenital, but in that case they partake more of the character of moles, being darkly pigmented and covered with soft hair. When acquired, they do not appear before the age of puberty; and unless they are very few in number, and quite isolated, they may always be looked upon as indicative either of gross inattention to cleanliness, or of a venereal taint. This taint, however, need not be syphilitic, for these growths are quite different from the gummatous tubercles which result from the purulent infection of syphilitic discharges. These warts often occur as a sequela to acute gonorrhœa, and seem to be caused by the discharge from the vagina in the chronic form of the disease. I believe such a condition in public women to be the source of gonorrhœa in the male of a peculiarly virulent character; so that warts on the genitals of prostitutes should always be regarded as specially demanding treatment.

They have been divided into the soft and hard varieties, but these differences are chiefly caused by the position of the wart causing it to be constantly or only occasionally exposed to the influence of moisture. They consist of a basis of connective tissue, with blood-vessels and nerves, covered with thickened epithelium. They are merely hypertrophied papillæ, a fact which explains their frequent appearance on young women, and their rarity in middle-aged and old women.

When neglected, they have a tendency to divide at the summit and become feathery, to form painful fissures at their base, and to be the source of infective discharges, by which they seem to extend to contiguous parts. In this way their distribution often becomes symmetrical; and I have seen it so extensive that it was hardly possible to identify the structures they covered. They may therefore become a source of great misery to their owners. There is no treatment of them so rapid, safe, and satisfactory, as removal by scissors, though when they are not very numerous, or when they are soft, they may be treated by the use of desiccating powders, such as alum, tannin, or sulphate of iron mixed with starch. When they are specific, calomel and starch. It is only, however, in the latter case that striking results are obtained by non-operative treatment.

The blennorrhagic discharges to which they seem due must be cured, or they will recur after removal.

Gummatous or mucous tubercle.—This eruption goes by various names, such as condyloma, &c., and its nature and relations have been very variously described. From my own observations, I conclude that the tubercles are essentially of the same nature as warts, with the exception that, being much more transitory, they have not the permanent basis of connective tissue which characterizes the former. They are certainly due to purulent infection of a specific nature, and consist essentially in inflammatory hypertrophy or the papillæ. They are therefore not primary sores, but I am quite certain they may be the source of primary infection in the other sex. Thus a woman whose primary sore has been closed for months may go on infecting fresh victims from a recurrent crop of mucous tubercles. She will be found to have a chronic vaginal discharge, full of leucocytes, which mats the hair of the labia, and is the immediate cause of the eruption. Connection takes place, and the leucocytes from the tubercles of the woman infect the mucous surfaces of the man,—a result which would have been obviated if the victim had been of cleanly habits. In fact, these mucous tubercles are rarely seen in women who are attentive to their persons; and very careful inquiry into cases where the history of the infection could be obtained has satisfied me that the great majority of men who suffer from syphilis are infected by these soft sores; whilst men, on the contrary, convey the disease from hard sores. In the experiments of those who have practised syphilization, it has been found that the contact of grease with the poison renders it completely inert. It follows, therefore, that the judicious application of a simple cerate to the genitals, and careful cleansings, would annihilate the possibility of syphilitic infection.

These mucous tubercles may be dry or moist, the difference depending greatly on their position and the stage they are in. They generally appear first on the inner surface of the labia majora, the discharge affecting some slight abrasion. The first result is the formation of a small cup-shaped sore, the edges of which become raised. The whole is elevated above the surrounding surface by the invasion of the subjacent tissue by

leucocytes, and these wander out at the surface in the form of a purulent discharge. If there is a mucous surface in contact, these leucocytes invade and infect that, and, carried elsewhere by the discharge, they rapidly infect, in a dirty woman, not only the vulva, but the anus, the folds of the groin, and, as I have seen in one case, even the umbilicus. They are soft, and bleed easily on touch. Their surfaces are always covered with discharge, unless they are fading or are in a position where they get dried. When cut into, they are seen to consist in hypertrophy of the mucous layer by the invasion of leucocytes. They are very easily cured; for all that is needed is the diligent employment of an astringent vaginal injection, and the frequent application of a puff powder containing thirty per cent. of calomel. Under this treatment they will vanish in a week; but as long as the patient remains in the secondary stage of her constitutional disease, they will return in crops if she becomes careless, and if she be not subjected to a prolonged course of constitutional treatment. This treatment should of course consist of iodide of potassium or of mercury, according as the practitioner finds the disease best treated by one or other or both in his particular locality; for I have found that the features of syphilis vary in different localities, and that these variations necessitate differences in its treatment.

Rupia.—The large scabs and subjacent ulcers of this secondary syphilitic affection are to be found occasionally on the labia, but only when it is also present elsewhere on the skin of the patients.

Xanthoma.—I have seen one case where the peculiar yellow patches of this dermal change were symmetrically distributed over the body. Both upper eyelids, the palms of both hands, the soles of both feet, large tracts on both sides of the chest and abdomen, and both labia majora, were occupied by it. The whole of the rest of the skin was darkly pigmented. The patient suffered no pain and had no special symptoms, but she gradually lost her strength and died of marasmus. I had no opportunity of making a post-mortem examination.

Nævus.—I have seen one or two cases of small nævi on the labia of infants. They require removal in order to satisfy the anxieties of the mothers, though they might very well be left alone. They are best removed by ligature or cautery.

Lupus.—This disease is occasionally met with both on the labia majora and the mons veneris. In hospital practice I have seen it only once, but in private practice it has come under my notice repeatedly. All the patients have been young women, none being older than thirty. It begins as a pimple, which is very slow in its progress, and which seems ultimately to exfoliate and to extrude from its crater-like opening a soft, yellow, putty-like material. A scab forms over it, and under the scab the disease seems to progress, sometimes in the direction of a curved or serpiginous line, but more frequently by general eccentric advancement. After a slow progress, usually extending over a year or two, the ulcers heal, and leave behind them depressed glistening scars. I have not found any treatment to be of much service in arresting it; and my experience of the application of escharotics, as advised by some dermatologists, has been especially unfavorable. The patient should be placed on tonic treatment, with cod-liver oil and arsenic, and removed to a warm climate if the disease proves inveterate. The disease undoubtedly belongs to that class of ailments due to some local infective process to which we give the name of tubercular. But it is only too clear that under this title a very inharmonious classification of diseases has been made, many

of which have nothing in common besides the mystery which surrounds their pathology.

This disease is also remarkable for its tendency to break out at intervals after having got perfectly well; and no patient who has ever suffered from it can be assured against its recurrence. This peculiarity has induced some authorities to refer it to a syphilitic origin, but in none of the cases which I have observed could I discover any reasonable basis for this belief.

I have never seen lupus produce those extensive destructions of tissues which are described by dermatologists when it attacks the face; and in all the cases where I have seen it on the genitals it has not been found elsewhere on the patient.

Inflammations and Ulcerations.—What I have to say concerning these affections of the labia may be taken to refer also to other parts of the genitals.

There can be no doubt that the genital mucous surface of women, like other mucous surfaces, suffers from simple catarrhal inflammation; and though in ninety-nine cases out of a hundred the practitioner may set down acute vulvitis as of infective origin, in the hundredth he may commit a grave error by referring it to the usual source. It may often be noticed that women with chronic discharges have them increased when suffering from general catarrh, and I have seen cases where catarrhal vaginitis was so severe, that, were it not for the improbabilities thrown in the way by surrounding circumstances, I should have regarded the disease as gonorrhœal. There is one condition, however, which I have never found in cases where the disease was probably of catarrhal origin, that being œdema of the vulva. I do not mean to say that vaginitis from infection may not be seen without œdema, but I regard its presence as almost pathognomonic of infection. When of simple catarrhal origin, there is not much pain, the chief distress being heat and itching of the parts, accompanied by a yellow discharge. When the labia majora are separated, the mucous surfaces are found injected and puffy, and the hymen, if it exist, of a purple hue, and the discharge purulent and tenacious, and not very abundant. This disease is most frequently seen in young girls who are virginal, and is at once cured by a weak astringent lotion of zinc or alum. If allowed to become chronic, as it often is, it gets very inveterate.

Vulvitis of undoubted origin by infection is a very different disease, though it must be borne in mind that there are cases between the two classes where no opinion as to the cause of the disease can be given.* In gonorrhœal inflammation of the genitals, especially if it be a first attack, the pain and scalding, especially during micturition, are remarkable; and the presence of œdema, with a profuse purulent and not glutinous discharge, puts the case beyond a doubt. If the labia be separated, the mucous surfaces will be found swollen, of a yellowish-red color, and bathed in pus. I may here express my conviction, which I find to be quite in harmony with the opinions of the most recent authorities on the subject, that while a man may contract a gonorrhœa of the most severe type from a woman who is not and never has been the subject of this disease, no

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* Too much caution can never be exercised in giving opinions upon the nature and origin of vaginal discharges. It is a frequent occurrence to find both husbands and wives accusing their spouses unjustly.

woman ever contracts gonorrhœa save by connection with a man suffering from it. The most severe cases which have come under my care have been very young girls, who have been infected at their first connection; and several of these I have found to be victims of the brutal superstition that a man can get quit of his disease by conferring it on a virgin. For the relief of the acute stage, no remedy is so good as the continuous application of hot fomentations of acetate of lead and opium, the same drugs being inserted into the vagina in the form of soluble pessaries. Sometimes the disease is so severe that the margins of the labia ulcerate, and in that case they should be kept asunder by strips of oiled lint. When the initial severity has passed off, the most useful applications are pessaries made of the oil of the Theobroma cacao, containing tannin or acetate of lead. After that, the prolonged use of injections of a solution of four per cent. of permanganate of lime will establish the cure. The absolute necessity of complete recovery must be insisted on with every patient, not only in her own interests, but in the interests of those with whom she may come in contact. During the acute stage of vaginitis, especially if of infective origin, vaginal injection should never be used on account of the risk of causing endometritis and even peri-oophoritis (see Inflammation of the Ovary).

In the course of some of the exanthematic diseases, acute inflammation is frequently met with. I have seen it in measles, in scarlet fever, and especially in small-pox. I once saw a child of ten years of age suffer from acute vaginitis in the course of scarlet fever, almost as badly as if she had had a severe gonorrhœa; and in small-pox it is not unusual to find the vaginal mucous surface inflamed and covered with the pustules of the disease. In diphtheria the same surfaces are liable to the specific form of inflammation seen in the fauces, and the ash-colored membrane may be stripped off from the vaginal walls as from the tonsils. But this diphtheritic form of inflammation is never found on the vaginal mucous surfaces alone, so that it need not be discussed here at further length.

Noma is a disease almost entirely confined to the children of miserably-housed and badly-fed people. It is not at all a common disease, and its most frequent seat is the face, but sometimes it is met with on the external genitals of young girls. It occurs always in the course of, or as a sequela to some severe exanthem, such as measles, scarlet fever or typhoid. It begins as a small reddish-yellow vesicle or pimple, which rapidly extends into the soft tissues by an indurated base. This soon becomes gangrenous, and the whole of the surrounding skin is occupied by an unhealthy œdema, and the constitutional symptoms are very severe. Very few of the children attacked by this disease recover. I have seen it only once on the genitals, and the patient died. The only treatment which can be entertained is the liberal administration of easily digested and nutritious food, and the local application of some disinfectant lotion, such as a solution of chlorate of potash.

Chronic inflammation of the vaginal and vulvar mucous surfaces is most frequently the result of an incomplete cure of the acute stage of the disease. I think that it may be safely said that in unchaste women a chronic inflammation is almost as dangerous as the acute form. Sometimes, however, a chronic inflammation of the labia may be the result of mere inattention to cleanliness, and without any previous acute process. Whatever may be the history, the appearances and the treatment are the same. The inner surfaces of the labia are slightly swollen, the labia minora are red and somewhat tender, and if a speculum be carefully introduced into the vagina the whole mucous surface will be found bathed in a copious, creamy, purulent discharge, and its usual smoothness disturbed by round elevated papillæ, which bleed easily when touched. This state of matters may have existed for years without having called for special attention. The history of several cases which have come under my care, in perfectly pure women, seems to have been that the increased indulgence immediately after marriage has induced the relapse of an old gonorrhœa in the husband, which has, of course, extended to his wife. Under the impression that her suffering was only part of her necessary experiences, the acute inflammation had been neglected, and it was only when continued sterility, or some other ailment, induced the patient to seek relief, that the real state of matters was revealed. In the fortunate cases where the disease has not extended into the uterus, it is easily remedied. Brushing the whole surface over with a mixture of equal parts of glycerine and carbolic acid, followed by the use of some simple astringent pessary, as acetate of lead or sulphate of zinc, will speedily effect a cure. In many cases this kind of chronic inflammation is the cause of sterility; and if the generative mechanism has received no permanent injury, of the kind to be afterwards referred to, the cure of the disease will remove the hindrance to impregnation. Those cases where the disease has passed within the uterus remain to be considered in another chapter.

There is a special form of chronic inflammation of the genital mucous surfaces in young girls which deserves close attention, not only from its intractable character, but from the disastrous mistakes to which it sometimes gives rise. This disease is generally classed under the strumous affections of childhood, though I really do not know why it should be so, for I have never been able to observe any close relationship between it and the ordinary indications of a strumous dyscrasy. There can be no doubt that it arises sometimes from the acute disease, which may be of catarrhal or of specific origin. I have never seen, so far as I can remember, a case of acute vulvo-vaginitis of catarrhal origin in a child; and I am thankful to say that I have seen very few of specific origin. These were of course due to the brutal conduct of such as do not deserve the name of men, but I believe offences of this kind to be much more rare in this country than is supposed; for I have repeatedly been called upon to make medico-legal examinations of children who asserted that men had assaulted them, but upon whom not the slightest evidence could be discovered in support of their statements. How they were able to give details such as I have heard, and which were absolutely incompatible with the facts, I do not know.

This chronic vulvo-vaginitis usually has no history of an acute stage. It is generally discovered by the child evincing pain on micturition, being found manipulating the organs, or by stains on the linen. Then the terrible idea that the child has been tampered with seizes upon the minds of the parents, and it is one of which they are not readily dispossessed. If

closely watched, many of these children will be found to masturbate; but whether this habit is the cause or the consequence only of the disease, I am quite unable to say. In a few cases I think it is the cause.

When the child is examined, the seat of the inflammation will be found to be almost solely the labia, majora and minora, and the anterior surface of the hymen. The vagina is rarely involved. I believe that in a large number of cases it is due entirely to a want of cleanliness, to the collection of the natural secretion in the parts, and its subsequent decomposition. In a few it will be found to be due to the presence of ascarides in the rectum; and in one case I found it due to the presence of a piece of worsted-thread, which seemed to have been gathered from the carpet.* Sometimes, however, it does seem to depend on some constitutional condition, for it resists all treatment except removal to a more favorable climate. It is these cases, perhaps, which have earned for it the title of strumous. Usually it yields rapidly to a careful toilette and the use of an ointment containing iodide or acetate of lead.

The primary specific ulcer from which follow the group of diseases which we class under the term constitutional syphilis, presents quite different appearances on the dry skin of the genitals from those possessed by it when it is seated on the mucous surface. Opportunities of seeing primary sores in women are not at all common; for when seated internally, the women are often not conscious of their existence; and when external they are regarded as pimples, and are seldom brought under the notice of the surgeon.

A case came under my observation about four years ago which convinced me that certain suspicions I had entertained concerning syphilis in women were correct, and its details are so interesting that I may give them at length. A gentleman sent his mistress to consult me concerning an obstinate little ulcer which had existed for some weeks amongst the hair of the mons veneris, close to its upper margin. I recognized it at once as a chancre, for it had exactly the same cup-shaped indolent appearance, with an indurated base and thin serous discharge, as characterizes the chancre on the male prepuce. She confessed to me that she had suspected its character, and she gave a singular account of its origin, which need not be repeated here. Suffice it to say that it was not derived from her protector, who had never suffered from any kind of venereal disease. It healed rapidly under the application of the nitrate of mercury ointment, and the internal administration of iodide of potassium. I heard no more of the couple for about three months, when the male came to me with an undoubted chancre, which he assured me must have been acquired from his mistress, as he had known no other woman for nearly three years. After the episode of her chancre, of which he did not know the character, he was absent from her for eight weeks, and at the first renewal of their intimacy they indulged in very great excess. The result was that in a few days she had a very numerous crop of mucous tubercles on the inner surfaces of the labia, and in three or four weeks he had a chancre. Mutual recriminations ensued, each asserting unfaithfulness on the part of the other. She came to me for the treatment of her sores, and assured me that no fresh contagion had been possible, and that her disease must have come from her protector. The most careful investigation of her genitals

* I have quite recently had a case of chronic discharge from the vulva of a girl six years of age, due to a collection of pins, thread, and rubbish of various descriptions, which she asserted had been introduced by her companions.

supported her statement. The old sore on the mons was firmly cicatrized, and nothing but the mucous patches on the labia existed. I have every reason to believe that these two people gave me their fullest confidence, even though sexual histories are notoriously untrustworthy, and the facts of the case seemed to resolve themselves into this: the woman had acquired syphilis from an outside source, and at the time of the excess already spoken of was probably just in the stage for the outbreak of some secondary affection. The injury done to the labia determined the outbreak of mucous tubercles there, and the secretion of these, fastening on some abrasion on the penis of the man, produced a chancre. I see no possibility of any other explanation, and only such a view can explain the great disproportion which exists between the detection of primary sores in women, and the general frequency of the disease in both women and men. If we accept the possibility of the mucous tubercles becoming sources of infection, the number of women in which we find them readily affords an explanation of the number of men who are infected. When a primary sore exists on a woman, it of course is a source of contagion. When seated on the mucous surface, it is generally found to be a deeply excavated ulcer, with sharply defined edges, somewhat under-cut, and with distinct induration. The floor of its cavity is of a grayish-purple color, and covered with a thin, clear discharge. I have seen it most frequently in the neighborhood of the clitoris, but it may be met with on any part of the mucous surface, including the lips of the cervix.

I have never seen anything which I suspected to be the initial stage of a chancre on the mucous surface, so that I can give no description of its early history. When seen in the later stages, I have always found it to heal rapidly, and with much less care than a chancre on the skin requires. As far as I have been able to determine, it has a very short course, and it rarely receives any treatment beyond what the surgeon himself gives it. I have been able to make a microscopical examination of a fragment of one of these mucous chancres, and found that it corresponded with Rindfleisch's description, in that it consisted of an infiltration of all the textures with round cells, and these seemed to me to be leucocytes.

Besides this undoubted primary ulceration, we sometimes see, especially on the inner margins of the labia majora, small, round, cup-shaped ulcerations, often very numerous, which are undoubtedly syphilitic, and are certainly secondary; that is, they follow a primary sore. Sometimes their bases feel somewhat indurated, a fact which makes me suspect that they may be secondary inoculations from the primary sore. They may, however, be more truly secondary, in that they appear after an interval from the healing of the primary sore. They are often the forerunners of the true mucous tubercles. They are very apt to recur in crops, and I am quite certain they may infect the male with a primary sore. They should be treated by the application of nitrate of mercury ointment and appropriate constitutional remedies. The best of these seems to me to be the biniodide of mercury.

The so-called rodent ulcer does not seem to differ much from epithelioma, save that it has not so great a tendency to affect neighboring glands. I removed one indurated ulcer from the inside of the labium which had been in existence for nearly ten years, yet had grown only to the size of a florin, and I regarded it as a rodent ulcer because its elements were chiefly fibrous with a few caudate cells, and there was no appearance of epithelial proliferation or nesting, such as characterize the true epitheliomata. I do not know, however, of any clinical appearances which would justify a

discrimination between the two diseases; and, as far as clinical results and treatment are concerned, they are much on an equality. Removal by the knife or ecraseur is always to be preferred to caustics; and no prophecies against the return of the disease can be made with safety.

Epithelioma is, unfortunately, a common disease of the female genitals, and may be found on any part of the cutaneous or mucous surface. According to the usual descriptions, it begins by the formation of one or more nodules about the size of pins' heads, with a shining surface, and a slightly reddish color. Or it may begin in some already existing structure, such as a wart. These nodules coalesce, and form an indurated and somewhat painful swelling, attached to the subjacent tissue. On a cutaneous surface the superficial epithelium becomes loose, but is not readily detached, unless by being picked or knocked off. It usually, for a time at least, adheres over the ulcer by the desiccation of the moisture which oozes out from below it, forming a scab. When this crust is removed, there does not seem to be much tendency for its reproduction, and the subjacent ulcer generally remains open. On a mucous surface this preliminary scab is not formed, the ulcer being the direct result of the abrasion of the epithelial surface. The margins of these ulcers are raised and indurated in a peculiar abrupt line, which once recognized is never likely to be forgotten. The edges of the ulcer have a tendency to overhang the crypt, and the raw surface may present varying appearances, according to the treatment it has received; but under all circumstances it will be found to be indurated like the edges, though not to so marked an extent if the skin has been destroyed and the subjacent textures invaded. If carefully protected from interference and covered by some mild dressing, it will present very much the look of a healthy wound, with bright red granulations, as if it were making an effort to heal. So much is this sometimes the case, that I have seen mistakes in diagnosis made by really experienced surgeons, who have sent away undoubted epitheliomata with the assurance that recovery would be speedy under the new treatment prescribed. If much interfered with, the surface looks dry and of a purplish color, and bleeds on the slightest touch.

The progress of the disease on the external genitals is usually slow, until it has infected the inguinal or pelvic glands. I have met with it on the mons veneris, on the labia, and on the walls of the vagina. Its most common seat is the cervix, and the next most frequent is the neighborhood of the clitoris.

If left alone, the ulceration gradually extends over the adjacent skin and mucous surface, lays bare the deeper structures, and by the hæmorrhages and continuous discharge finally exhausts the patient. The end is usually brought about by an invasion of the neighboring lymphatics, which take on an encephaloid growth.

The propriety of meddling with malignant growths is, in my opinion, a question which requires a much more painstaking investigation than has yet been given to it. But I do not think that there can be any doubt of the advantage of removing epitheliomatous ulcers in an early stage when a margin of healthy tissue can be removed with them. When this is accomplished, the disease may never return, even when microscopical investigation shows, as far as it can, that the elements of the growth are truly cancerous. But no positive assurances that it will never return can be given, for in one case where I removed a small-sized and rather chronic epithelioma from the right labium, death took place within a year from cancer of the pelvic glands.

The structure of these growths consists primarily of an increase of the epithelial elements of the skin, and to a much less extent of its fibrous stroma. The cells present here and there a peculiar nodular arrangement to which the term "nesting" has been applied. I think that it is probable that these nests are endogenous centres of growth for the multiplied cells. The cells do not present the appearances of mature epithelium, and, as the growth progresses, their resemblance to epithelium becomes less and less, till at last, when examined in the most advanced stage of their growth, they present that characteristic want of resemblance to any kind of cell in particular which is really the best description of cancer cells. It seems also as if the clinical malignancy of the growth increases just in proportion as the elements lose their resemblance to mature epithelium.

Epithelioma has been divided into the superficial and deep varieties; but, as far as I have been able to see, these are mere stages of the same process. If a case is very protracted, and we see it in the early stage, we may call it an example of superficial epithelioma. But if it is rapid in its growth, or if we see it only at a late stage, we may refer it to the deep-seated variety. It is quite certain that the superficial form always merges into the deep-seated if left alone.

On mucous surfaces epithelioma presents some very important differences from its appearances and history when it attacks skin. Thus, it does not scab; its apparent tendency to heal is never visible, and its course is much more rapid. The discharge from it is much more profuse, and the tendency to hæmorrhage is much greater. It affects neighboring glands much more rapidly, and is altogether a far more formidable disease. The only possible remedy for it is early and free removal, and the results of this are very doubtful.

Abscesses of the labia may be acute or chronic. When of the former kind, they are usually the result of blows or of severe inflammation, as gonorrhœa. They give rise to severe constitutional disturbance and great pain, and they share with abscess of the face the peculiarity of having within them pus of a peculiarly fœtid odor. I do not know the cause of this fœtor, indeed I have not seen it mentioned by authorities; but I have never found the peculiar smell of the pus from abscess in the face or in the female genitals to be possessed by pus from any other source. These acute abscesses should be opened as soon as fluctuation is determined, and poultices applied till the inflammatory process abates.

The chronic labial abscess has been stated to arise generally from closure of the orifices of the mucous crypts or of the vulvo-vaginal glands. This may be so in many instances; but there is a peculiar form of chronic abscess of the body of the labium of a cystic character, which seems to have its origin in an obstructed vein. It is peculiarly apt to recur, and if not freely opened leaves a sinus, which never closes permanently until it has been freely laid open. These abscesses are very slow in their progress, and give a great deal of trouble and pain. They feel like filberts in the substance of the labium, and when opened emit a small quantity of glairy pus, which has not, like the acute abscess, any peculiarly offensive smell. In some instances they remain fistulous with such obstinacy that I have been obliged to pass a seton through the cavity and keep it there for some weeks in order to secure its perfect closure.

The vulvo-vaginal gland (Bartholini's gland) is apt to be the seat of an abscess in acute gonorrhœa, or from obstruction to the orifice of its ducts. It may also suffer from chronic inflammatory enlargement to such

an extent as to render intercourse painful, in which case it ought to be removed.

Tumors.—In all cases of general œdema of the body in women, the vulva is one of the points where it is first displayed, and where it becomes a source of trouble. In chronic œdema of the labia, associated with general dropsy, it is often necessary to make punctures with a lancet in order to allow the serum to drain away. It is safer to use a lancet than a needle, but the punctures must not be made large, and the patient ought to be made aware of the risk of sloughing which always accompanies the operation. The relief afforded by it, however, is generally so great as to compensate fully for the risk. Œdema of the vulva, accompanying acute inflammation, has already been referred to.

Simple hypertrophy of the labia sometimes is such a source of annoyance and hindrance to sexual intercourse as to require operative interference. It is often seen in young women who toy with their genitals, and also in women who have borne large families. In hot weather the hypertrophied organs get chafed, so that the outer surfaces and the opponent surfaces of the thighs become raw and sore, requiring the constant use of starch puff powder.

Simple sclerosis of the labia is probably only the early stage of two forms of disease of which I shall speak immediately—elephantiasis and syphilitic hypertrophy. I have now under my care a patient in whom I have watched a sclerosis of the left labium for nearly four years, but it remains exactly where it was when she first came under my notice. The tissues are not hypertrophied, and the labium is not fixed, but through its greater part it is as hard as cartilage. The history is vague, but the condition seems to have been in progress about eighteen years.

Of elephantiasis I have seen only one case, which was sent to me by my friend, Dr. Campbell, of Stourbridge. In that case the labia were symmetrically and enormously hypertrophied, and had to be removed by the ecraseur to allow the woman to be delivered. The growths were quite soft and were nodulated all over, and were composed simply of an overgrowth of the elements of the skin and subcutaneous tissue, especially of the fatty nodules and its fibrous trabeculæ. The wounds healed rapidly, and now, after four years, it has shown no tendency to recur.

The tertiary syphilitic growth of the genitals, to which I have already made casual reference, is a disease which seems to be not very well known, and of which I have not, as yet, seen any detailed description. It will be most convenient if I give, first of all, the details of a case which was for several years under my care in hospital practice, and of which I have a very perfect history.

Mrs. M., aged thirty-five, when she came under my care in 1871, had contracted syphilis from her husband five years before. The only secondary symptoms from which she had suffered were a slight sore throat, lasting for three or four weeks, and a few crops of papular eruption. Previous to her infection she had had seven children, and two years after it she had another, quite healthy. Soon after the birth of this child she noticed a few hard lumps growing upon the labia. They were quite painless, and gave her very little discomfort. They steadily increased till the whole vulva was involved, and intercourse became impossible. She applied to many institutions, and was always told that her disease was cancerous, and that a cure was impossible. When I first saw her, the condition was terrible. She could only stand or lie; she could not sit. Midway between the pubis and the umbilicus, and from that point over the folds of the

groins for seven or eight centimetres down the thighs, over the whole vulva, perinæum, and round over the greater part of both buttocks, the skin was greatly thickened, quite hard, and occupied by large irregular tuberculated nodules. The whole was absolutely fixed to the subjacent textures. These nodules amounted to large tumors over the mons veneris and labia, and on the nates they were traversed by five or six fistulous tracks, from which feculent pus constantly flowed. It was quite impossible to discover exactly where the anus was, and the finger could not be inserted into the vagina. The poor woman's life was perfectly wretched.

Having previously seen some growths of much less magnitude, but of quite the same character, which were undoubtedly syphilitic, and which disappeared entirely under specific treatment, I gave this poor woman the hope that a cure was possible. I placed her upon gramme doses of iodide of potassium three times a day, with a carbolic acid lotion to relieve the horrible fœtor. This was persevered in for some months without the slightest improvement. She was then treated by Donovan's solution, which consists of the proto-ioduret of mercury and arsenic, and before she had taken it two months a marvellous improvement was effected ; so that in March, 1872, the growths had diminished fully one-third in size, and she was able to walk about and sit down, the greatest improvement having been effected in the nates, and all the fistulæ but one having healed completely. In July, the last fistula had closed, and motions of an ordinary kind were passed, though ocular examination alone did not reveal the situation of the anus. In this month her treatment was changed to the bichloride of mercury, of which she took ·006 of a gramme thrice daily perseveringly for the next twelve months.

In October, the labia were so reduced in size that the finger could be passed into the vagina, when it was ascertained that the canal was quite healthy, as was also the uterus. In January, 1873, all the induration had disappeared, save from the skin round the anus, the rest of the textures having become perfectly normal in every respect. In October, she discontinued the treatment, and was then five months pregnant. In February, 1874, she was confined of an enormous child, which had to be eviscerated, partly on account of its size and partly on account of a pelvic deformity of the mother. She unfortunately died of metria fourteen or fifteen days after confinement. At the post-mortem examination, a small patch of induration in the neighborhood of the perinæum was removed. Microscopic examination showed that it was composed chiefly of elongated caudate cells, imperfectly transformed into fibres, with loculi here and there, in which free cells with large nuclei were lodged. The hypertrophy seemed to be confined to the papillary layer of the skin.

This case has in its history absolute proof that the remarkable growths were syphilomata. Their position and their history, as well as the less satisfactory results of post-mortem examination, lead me to believe that such a disease is only a chronic form of the mucous tubercle. Before the occurrence of this case, I had seen others, and since then I have had further experience of this singular disease, and in every instance a cure has been effected by mercury, whilst iodide of potassium has utterly failed to affect it in any way. Were this the appropriate place, I might adduce at length evidence which has been some time accumulating in my experience, that syphilis presents very different clinical features, and that we have in it very different therapeutical results in different localities. Thus, in a large number of cases of syphilis, probably amounting now to some hundreds, which I have seen in Birmingham, I have only twice seen rupiform

eruptions, and in both of these cases the disease was contracted elsewhere, in seaports. With us, the immediate or secondary symptoms are rarely so severe as I saw them in Edinburgh, whilst the number of syphilomatous indurations, in the tongue and vulva, is most remarkable. In these latter, the only remedy which need be given is mercury, iodide of potassium being quite useless. Now in my earlier experience, in Edinburgh and elsewhere, the secondary symptoms were noticed to be usually very severe, and bad tertiary or gummatous growths were to me quite unknown by actual experience; and iodide of potassium was the favorite remedy, mercury being regarded with disfavor. This subject is one of great importance, and worthy of being most carefully investigated.

Hæmatoma and thrombus of the labia are conditions which are chiefly associated with pregnancy, but they may be met with as the result of violence to women who are not pregnant. I have been consulted by a husband in great alarm on the morning after his wedding, to find that his awkwardness had caused a large effusion of blood into the subcutaneous tissues of his wife's labia. A more terrible set of cases are those which come before us occasionally as medical jurists, where a number of men have consecutively had violent intercourse with one woman; or, worse still, where a man has kicked or struck a woman on the genitals, either because she would not admit his advances, or after he had accomplished his purpose. Some of these latter cases have ended fatally by hæmorrhage. The most usual cause of thrombus is pregnancy, a condition which induces hyperæmia of all the pelvic organs and of the lower limbs.

It is well known that one of the signs of pregnancy is a purplish coloration of the vulva and vagina, due to an enlargement of the venous radicles. During the later months of pregnancy, especially in women who have borne a large number of children, the veins become very much distended, and any unusual strain will cause their rupture, and the effusion of blood into the surrounding tissue. I have known this to occur by only slight straining, such as lifting a pail of water. It may also occur *in coitu*, and is especially common in labor. During the severe expulsive efforts which occur towards the end of the second stage of labor, these veins often give way and cause thrombi, which are sometimes so large as to interfere with the progress of the labor. If this should be the case, the labium must be laid open, and the clot turned out, but under no other circumstances should it be interfered with. In some unfortunate cases these collections of blood break down after a few days, and become fœtid abscesses, accompanied by extensive sloughing, and followed by septicæmia. When the possibility of this has been suspected, a free incision should be made to evacuate the débris, as being the step most likely to obviate the last and most unfortunate process.

Another and still more sad kind of vaginal thrombus is that which I have seen produced once or twice by the abuse of instruments in unskilled hands. I shall never forget being called to a case at a distance where the practitioner had made a most unjustifiably protracted attempt to deliver a woman by means of the forceps, during which he told me that they had slipped at least twenty times. I found the vulva a mass of cuts and bruises, so that its textures were hardly recognizable, and the whole of them were infiltrated with blood clot. The whole of the soft parts sloughed in a few days, and the patient died.

The enlargement of the veins of the labia seen in women who have borne children is sometimes so great as to constitute a permanent and serious inconvenience. Such varicoceles are also seen in women who have never

borne children, and in a few rare cases seem to have been congenital. Some three years ago I was consulted by a young woman who had been married for five or six years, and in whom coition was impossible on account of enormous varicoceles of both labia, which had been in existence all her life, but had greatly increased since puberty. In fact, her hymen still remained intact. Two attempts had been made to remove them by the knife, but the hæmorrhage was so terrible that the operations were not completed. As she was determined to run any risk for their removal, I undertook it, after warning her that it would probably be fatal. I introduced a stout needle through the basis of each labium, and passed a strong india-rubber ligature above it, completely strangling each mass. In a week the ligatures had cut their ways through the tissues without any bad result, the only trouble being the great pain caused by the ligatures, which required the constant administration of opium. She is now quite well, and has a living child. The enlargements were found to consist of large venous sinuses with very thick walls.

Small cystic tumors of the labia are very common, and are usually of three varieties, the most common of which has simple glairy contents, and probably arises from the closure of the orifice of one of the numerous mucous glands. These are usually placed very superficially under the mucous surface, and are to be treated by simple evacuation. The second and less common variety is situated in the body of the labium, is of larger size, and its contents may be thick and tenacious, but clear, or partly purulent, or even sebaceous. To prevent a fistula remaining after the opening of this cyst, it is always better to remove it entirely, or to leave a seton for some weeks in its cavity; but the latter treatment will be found the more severe of the two. The third and least common of the three kinds is that which has sanguineous contents, and is probably the result of the closure of the loop of a vein by the inflammatory adhesion of its inner coat. These can always be cured by simple evacuation, an operation which, in my experience, is quite without risk.

The extrusion of some of the abdominal contents into the labia as a hernia is common enough to have come under the notice of most experienced gynæcologists. The passage takes place through an unobliterated fœtal structure, Nuck's canal, and may consist either of omentum, intestine, or the ovary. The rarity with which this canal remains open explains, I believe, the comparative frequency of femoral hernia in women. But probably in one out of every thirty or forty cases of inguinal hernia in women, the protrusion will be found to pass into the labium, and disastrous cases are on record where the sac has been cut into under the belief that it was a cyst. Cases are also on record where the ovaries, and even the uterus, have been found in this unusual position. The diagnosis of these protrusions is not difficult if care be taken to investigate the conditions of the tissues between the swelling and the abdominal wall; for in the case of a hernia, a neck will be discovered leading up to the inguinal opening, which will render any doubt as to the nature of the case impossible. If the protrusion can be completely returned, a radical cure may be effected by such operations as are advised by Wood or Wutzer.

Lipomatous growths, either encysted or the result of hypertrophy of the locular fat of the labium, are also met with here; and if interference with them be necessary, they may be removed by an ordinary cutting operation.*

* I have lately seen a case where the labia are enormously enlarged by fatty hypertrophy, the patient being estimated to weigh nearly four hundredweight.

Simpson has met with small true neuromata beneath the mucous membrane of the vulva, similar to the neuromata found elsewhere, but nothing of the kind has yet come under my notice. He recommends their removal. He does not describe them fully, but I presume that they correspond to the painful subcutaneous tumor of Wood. The most common form of malignant growth on the vulva is the epitheliomatous, but I have also seen the labium the seat of an encephaloid tumor, a hopeless condition, of course.

Malformations.—Children are sometimes brought to us with congenital malformations, which make it a matter of difficulty to determine which sex they belong to, and there are others who are referred to one sex or the other by their parents without the direction of a skilled opinion. In these latter cases, awkward mistakes are sometimes made which have to be rectified in later life. There are many historic cases of males having been married as women, and of women who have been placed in the positions of men. I know of one male, belonging to a wealthy family, who was christened as a girl, and still, at an advanced age, is regarded as belonging to the other sex, and dresses accordingly. These cases of malformation are always very distressing to the parents, and they become afterwards a great trouble to the patients themselves. They may be divided into two classes for clinical purposes—those in which an arrest of development in the male organs give them an appearance as if the child belonged to the female sex, and those in which an excessive development makes the female organs resemble those of the male.

The first of these two classes is by far the more common of the two; and in all cases of difficulty it is a good rule to assume that it is a male child unless the contrary can be shown, for in this way lamentable mistakes may be avoided. By the time a male arrives at the age of marriage, he will have learnt, from the education which all men go through soon after puberty, whether or not he has marital capacity; and if he finds that he has not, he will not attempt to enter married life. But the majority of women enter the married state with but a very hazy notion of what its functions are, a misfortune to which a large proportion of their special diseases may be attributed. If a malformed male, therefore, should be brought up as a woman, he may enter, and in very many instances actually has entered, the state of marriage, utterly unaware of his misfortune.

Cases of extroversion of the bladder, a deformity which occurs much more frequently in male than in female children, has been set down as one of the forms of spurious hermaphroditism, which renders the determination of the sex difficult. But in those cases where it really does so, the arrest of development is so great as to render any question of marriage quite impossible. So also we may dismiss the cases where the penis has become adherent to the scrotum, or otherwise covered by integument; for such cases will reveal themselves at puberty, and no greater misfortune than an error of nomenclature will have been experienced.

The real difficulties occur in those cases in which the deformity is due to an arrest of development causing incomplete closure of the genital raphe. These malformations are in fact a reversion of type to those classes of animals in which there is a cloaca, or common outlet for the genito-urinary apparatus and the intestinal canal. The two folds which are developed from the walls of the cloaca early in the life of the human embryo unite more or less imperfectly, and the results vary according to the degree of the imperfection. Thus if the first pair of folds do not unite, the cloacal arrangement of the bird is retained; whilst if the second

folds remain separate anteriorly from the pelvic portion, the separate arrangement of the urinary and genital canal seen in females, where the vulva only forms the common canal, is established. The sexual differences, as far as the external genitals are concerned, date from this point; the organs of the male, by which the genito-urinary track is continued through a common tube from the pelvis, being formed by a further union of the anterior folds. Other changes of course take place in the surfaces of the Wolffan bodies, where the same structures are developed into ovaries or testicles, as the case may be. If, then, we have testicles formed in the abdomen, whilst the anterior cloacal folds do not unite further than their pelvic portion, we have a product which is the kind of spurious hermaphroditism now under consideration. When a case of this kind presents itself, its most striking feature is a median cleft with two lateral eminences which looks exactly like the orifice of a vagina bounded by its two labia. At the anterior commissure is a stunted penis, which may be mistaken for a hypertrophied clitoris. But if the structures be examined carefully, there will be usually no difficulty in determining that this fissure is merely the open urethra, the supposed clitoris being grooved in the same way that the glans of the penis is in hypospadias, and the mucous membrane of the unclosed urethra is distinctly marked on the under surface of the stunted penis. If there is a second canal, the sex of the patient is beyond doubt; and this is also the case if testicles can be found in the cleft scrotum, the halves of which represent the labia. But in many of these cases the testicles either do not descend at all, or do so only incompletely, and they must therefore be searched for carefully in the inguinal canal. If they are not to be discovered, then, having found the urinary orifice, a separate genital canal must be looked for, and unless it can be demonstrated, the suspicion must be entertained that the child is a male.* But it must be borne in mind that there is a peculiar union of the labia minora (cellular atresia, to be afterwards described), which may completely hide the genital orifice. I have been three times called in to give an opinion on the sex of children where this cellular atresia of the nymphæ constituted the whole difficulty. Where this condition exists, there is always a space behind the urinary orifice which is suggestive of its existence, and a touch of the knife will decide it at once, without the possibility of doing mischief. If after this no genital orifice can be discovered, let the patient be considered as a male, for if brought up amongst males but little harm can come to him. If, however, an individual were brought up amongst girls who turned out to be a semi-competent male, no end of mischief might accrue, as is amply proved in the case of Madelaine Mugnoz, the nun of Ubeda, who suffered death for rape.

I was consulted in the case of a prisoner in the * * * Prison, who was confined on the male side, and who for thirty-seven years had passed as a male; but I detected a small yet quite distinct genital canal behind the urinary orifice, which was decisive of the person being a woman. I obtained a photograph of her naked; and the outlines of the figure, having the wide pelvis, narrow chest, and inturned thighs, quite confirmed my opinion. No appearance of menstruation had ever been noticed, and she

* Whilst this has been passing through the press, I have been called upon, in conjunction with my friend, Mr. Langley Browne, to pronounce an opinion on the sex of two children sent over from Turkey for that purpose. They were aged nineteen months and nine years respectively, and had both been baptized and brought up as girls. Without doubt, however, they are both males, and the elder already gives evidence of coming functional activity.

had never entertained any partiality for either sex,—facts probably due to an infantile condition of the internal organs as marked as that of the external. The facts were fully placed before her, but she begged of us never to reveal her secret, and she served out her time as a male convict. She was of strong and robust frame, so that no harm was done.

Deformities of the external genitals of female children are much less complicated, and less likely to lead to mistakes than those already described. Only two varieties of malformation have been described as of importance, that in which the clitoris is abnormally enlarged, and that in which the cervix uteri is elongated and protruded.

I have now in my possession a preparation of a newly-born child, in which the cervix is protruded from the vulva nearly a centimetre; but I can hardly imagine such a protrusion being mistaken for a penis, save by a very careless and hasty observer. Even the case of Marguerite Malaun, described in the Philosophical Transactions of London for 1686, where the cervix is stated to have been seven inches long, we can only accept the mistake as being due to the credulity of the observers.*

Abnormal development of the clitoris has come under my notice several times, and in a young infant it certainly has a startling resemblance to the small organ of a male child on superficial examination; but the separation of the labia at once reveals the orifice of the genital canal behind that of the urethra. If cellular adhesion of the nymphæ should coexist with enlargement of the clitoris, a combination not impossible but hitherto unrecorded, unless we accept the anomalous case recorded by Arnaud in his "Dissertation sur les Hermaphrodites" (p. 265), as an instance, a mistake would be possible, but all doubt certainly would be removed at the first occurrence of menstruation, as it was in Arnaud's case. Even with this combination, however, a scratch with the surgeon's knife would at once remove all possibility of error.

Acquired malformations are exclusively the result of injuries or of cicatricial contraction from ulceration or sloughing. Cases of this kind must be very rare, for I have met with only one instance of serious deformity of this kind; and the general principles of treatment do not differ from those demanded by congenital deformities.

Labia Minora, or Nymphæ.

These structures share with the labia majora many of the conditions already described, and these need not be again referred to. But there are, in addition, certain states of malformation, and certain results of injury and disease by which they are affected, without the labia majoria being involved.

The first of these is the very interesting and singularly little known malformation to which I have already referred under the term of cellular atresia. This term is not a very happy one, for it does not give any clear notion of the condition. It was first used by Bokai, from whom Steiner has taken a description (Compendium der Kinderkrankheiten, 1874); and these two authorities are, so far as I know, the only ones who make any reference to this interesting malformation. Yet it cannot be very uncom-

* From the Transactions of the Royal Society, Vol. III. p. 356, I translate the following: "The member (penis) is well formed, except that it has no prepuce, and that there is no appearance of testicles. The menstrual blood also flows from its orifice. After having consulted Messieurs the Vicars-General, we made him dress himself as a man."

mon, for I have seen at least six cases in hospital and in private practice. All these were infants, as might be expected, with one exception; for a mother's anxiety always detects any malformation of the genitals very early in life. In the exceptional case, the girl was between eleven and twelve years of age; but with the addition that the union was much more firm than in the infants, the conditions were identical in all. When the labia majora are separated in such a case, it seems as if the skin of the one passed over on to the other, forming a continuation of the perinæum, obliterating the vestibulum vaginæ. Only a small aperture appears at the anterior commissure, corresponding with the urinary orifice; but if careful search be made with a probe immediately behind this, an aperture will be found leading into the vagina, and a sharp tear with the probe will destroy the adhesion and put the structures in their normal relations. There can be little doubt, I think, that this form of atresia is a malformation by hypererchesis, a partial union of the anterior cloacal folds for the continuation forwards of the genital and urinary tracks in a common canal, as in the male; whilst the internal development has resolved upon ovaries instead of testicles. It is therefore the counterpart of the arrest of the closure of the same folds in the male, where the Wolffian bodies have resolved upon producing testicles. If a case should be found where this closure had advanced so far as to produce a rudimentary urethra on the under surface of an enlarged clitoris, we should have an exact reversion of type to the condition of the female organs of the Loris gracilis, a small nocturnal lemur which inhabits Ceylon, and which, curiously enough, has no tail.

Both Bokai and Steiner speak of having seen cases where the atresia was incomplete, that is, I presume, where it had not extended forwards close to the meatus urinarius. I have never seen any in which it was not complete.

The union in the human nymphæ is of course cellular, as all other adhesions are; but I think that this interesting malformation is deserving of a more distinctive title, and the most appropriate which I can manufacture is "congenital cheilosyncleisis."

At a woman's first intercourse, the hymen and nymphæ are both usually ruptured; and if the male organ be of disproportionate size, the injury is sometimes very serious. Every gynæcologist must have listened to the histories given by suffering women of the miseries they underwent during the first six or eight months of their married lives, miseries which are greatly due to the absurd social custom of the honeymoon. The rupture of the nymphæ does not always occur, for the injury may be limited to the fossa navicularis; but I have seen it as a set of radiating fissures all over the vestibule. In these cases the hæmorrhage is sometimes alarming; and as intercourse is repeated at very frequent intervals during the first few months of married life, the fissures are not allowed to heal, and they result in painful cracks, which ultimately render intercourse so painful as to oblige the woman sometimes to refuse altogether to submit to it, and in nearly all cases she does not derive from it for many months that gratification which is one of its legitimate objects. This suffering may be wholly avoided, or at least greatly diminished and curtailed, by the inunction of the vulva with a simple cerate prior to congress; and I have repeatedly by such simple means been enabled to put an end to sufferings which were so serious as to threaten to break up a household. If the fissures are very deep and irregular they must be divided, just as similar fissures are divided in the anus, and intercourse must be suspended till

they are healed. It would be a great blessing to women about to be married if their mothers would give them a little advice based on their own experience; but there is a false modesty on these subjects ingrained in our English life which has to be paid for in much suffering amongst women.

Fissures at the fossa navicularis are often left from the tear of the perinæum, which occurs at almost all first labors, and these are sometimes so painful as utterly to prevent intercourse. They are, besides, a constant source of discomfort in walking, and when the patient passes water. Sometimes even after the tear has completely healed, the scar remains so tender for months that coitus is impossible. If there is a fissure, it had better be divided, and the whole surface touched with solid nitrate of silver, the parts being kept absolutely at rest for a few weeks. If it is only a tender spot, the use of a little cerate before intercourse will obviate all pain.

The nymphæ are also subject to a peculiar degenerative and atrophic change, which occurs only at or after the climacteric period. It is a very distressing complaint, and one of the most intractable with which we ever have to deal. It is very often, but by no means always, associated with vascular caruncle of the urethra, of which I shall speak further on. This affection has been alluded to by Simpson and various other authors, but no description which I have seen includes all the facts that may be observed in connection with it. It is always confined, in my experience, to the mucous membrane on the inner surfaces of the nymphæ, and is never met with on the labia majora or in the vagina higher than the vestibule. It is a very frequent cause of the total suspension of marital intercourse, and is the real disease existing in a large number of cases of so-called vaginismus, a term which is widely used as a cloak to cover ignorance and carelessness. A patient suffering from this disease will nearly always be found to be over forty years of age, and she will state that she has a slight yellow discharge, a good deal of scalding when she passes water, and that she suffers excruciating agony on any attempt at intercourse. This latter is always the first symptom in date; and when a case comes under the notice of the gynæcologist, it will generally be found that intercourse has been discontinued for many months, if not for several years. The misery is very great, and a great deal of the climacteric drunkenness, too common among women, is due to this disease. When the labia are separated and an inspection made, one or two spots of redness on the mucous surface of the nymphæ will be observed, varying in color from a palish brick-red to a bright purple; and if these be touched they will be found to be exquisitely tender. If very carefully observed in a chronic case, these spots will be found to be very slightly below the level of the normal mucous membrane. If a case be watched for a long time, it will be found that the spots are transitory and spreading; that after lasting for some months, the red coloring either entirely disappears from the spot observed, and comes out at another, or extends serpiginously, disappearing from the old site as it progresses towards the new. This process is very slow, but it explains the intractable nature of the disease, which is seldom content until it has passed over the whole mucous surface of the nymphæ. During its progress, the vestibule of the vagina slowly contracts, until, as in the case of a widow lady now under my care, it may be so reduced as barely to admit a finger, even though the patient has borne several children. In her case the disease has been going on for nearly six years.

In one instance I was enabled to remove a fragment of mucous membrane containing a patch of this vascular change, and I found enough to display the pathology of this mysterious disease. I placed the fresh fragment in my freezing leptotome, and having stained the sections by hæmatoxylin, silver lactate, gold perchloride, and carmine, I found that at the site of the spot all the textures had been removed save a few fibres, the walls of the capillaries, and the superficial epithelium, under which the loops of capillaries with thinned and dilated walls lay almost unprotected. The gold staining also showed nerve fibres, which lay amongst the capillaries almost as unprotected. These observations explain the three chief clinical facts of the disease, the great pain, the abnormal vascularity of the spots and their tendency to bleed when touched, and the contraction of the surface in the third stage. It is, in fact, a progressive atrophy of the mucous membrane, the last textures affected being the blood-vessels and nerves; for when the process has been completed the pain ceases, the redness disappears, and nothing remains but a vestibulum vaginæ so narrow that incredulity may be excused when the patient states that she has borne children.

I have been fortunate enough in two cases, one of which furnished the specimen described, to watch the complete course of the disease, almost from its commencement to its perfect recovery, and I have seen all the stages described. This experience is rare, because the patients suffer so much, and they see so little prospect of cure, that they generally wander about from one gynæcologist to another, until the degenerative process works its own cure. Great relief is obtained, though only temporary, by the application of strong carbolic acid to the red spots. The acid is a powerful local anæsthetic, and it never fails to mitigate the tenderness for a time. The application of a plug of cotton wool, soaked in a saturated solution of neutral acetate of lead in glycerine, placed between the nymphæ at bed-time, is also generally successful in procuring some relief. The patient should always be informed that the progress of her disease will extend over years, that it will certainly get well in time, but that treatment from time to time will give her relief. She seldom retains this belief for any length of time, for it is the misfortune of gynæcologists that the diseases they treat are generally so chronic in the courses they run, that the patients wander about and rarely give any one practitioner a very prolonged trial.

The Hymen.

Atresia of the hymen, or imperforate hymen, is, I believe, always congenital, and is produced by an agglutination of the edges of the two papillary eminences which Dohrn describes as forming the hymen at about the nineteenth week of embryonic life. The fact that the hymen is developed so late is alone quite enough to disprove Simpson's view, that atresia of the hymen represents the closure of the male perinæum. The structures engaged are wholly different, and the malformation now under consideration is strictly analogous to the closure of the vagina, which exists in certain rodents, the atresia being temporarily undone at the period of rut, or for parturition, and closing again immediately after. The closure of the male perinæum, I have already said, has its true representative in congenital cheilosyncleisis. Atresia of the hymen is not very common, and is discovered generally some months after puberty by the formation of a tumor, and the general symptoms of retention of the menstrual fluid.

Sometimes, however, it is detected much earlier by the mother, and a young child is brought for treatment. This should consist of a crucial incision, followed by the insertion of an ebonite plug, to prevent re-union of the cut surfaces. In those cases where the malformation has existed until it has become the cause of the detention of menstrual fluid, the hymen should be incised very freely, so as to allow a free exit to the thick treacly fluid, and the cavity should be frequently washed out with a five per cent. solution of carbolic acid used warm.

The hymen may be abnormally tough, so as to prevent the completion of marriage. In such a case it must be incised, and a cerate should be employed to facilitate congress.

When ruptured by coitus, painful fissures frequently result, as in the nymphæ, and may require the same treatment. But a more frequent result of its rupture is the formation of painful tubercles, the carunculæ myrtiformes, which consist of the flaps of the hymen somewhat shortened. Their surfaces remain raw, and at each renewed attempt at intercourse they bleed, and give rise to great pain. The use of an astringent lotion, the application of nitrate of silver, or even the complete removal of the tubercles by the scissors, may be required. In all such cases the application of a simple cerate to the vulva should be made before intercourse is attempted.

The hymen may be congenitally absent, or it may be so lax as not to be destroyed by complete intercourse ; or it may have been destroyed by the ulceration of strumous vulvitis already described. Pregnancy may result without rupture of the hymen, so that great care must always be exercised in expressing any opinion as to a case of defloration. The presence of a tense hymen, and the absence of any tearing of the nymphæ or of the commissure, may certainly be regarded as positive proof that complete connection has not taken place. When the finger can be passed into the vagina past a lax hymen, the indication is negative ; but where there is any indication of radiating fissures of the nymphæ, hymen, or commissure, there is ground for suspicion that intercourse has been attempted.

When called upon to examine a female upon whom it is asserted a rape has been committed or attempted, the practitioner must bear in mind that his business lies solely with the medical facts and the appearances of the parts, and that he had therefore better pay no heed to the voluminous history which it is likely he will be favored with. Still more must he bear in mind that it is not within his province to interrogate or investigate statements. Medical witnesses are prone to forget this. He must also bear in mind that it has been established by decisions that complete penetration is not necessary to the establishment of the crime, and that therefore he may not find a ruptured hymen. As far as the medical elements of the case are concerned, he has to deal solely with evidences of violence at the parts themselves, and with any scratches, bruises or wounds to which his attention may be drawn, and to an explanation from his own standpoint, *and that only*, as to how these may have been caused. If the alleged victim be examined within a few hours of the alleged injury, and the examiner find ecchymosis, bleeding, recent lacerations, with some swelling of the genitals, he will probably conclude that he can give evidence for the prosecution. But he must still bear in mind that numerous cases can be cited in which such injuries have been designedly inflicted to support an unjust charge, and he must consider the direction of the lacerations, and their coincidence with the probable size of the organ by which

it is stated they were inflicted. He may be asked to examine the accused, but he must bear in mind that to do this he must have the full consent of the accused. As mere vulvar penetration has been held to constitute a rape, he may have a genuine case submitted to him in which there has been no injury, and here he must leave the conviction to be secured by evidence other than his own.

If the assault has occurred some days before the examination is made, he will probably find the parts swollen and bathed in a purulent discharge, and it may be a difficult matter to find lacerations which really exist; and he must be careful not to set down any superficial ulcerations he may see as necessarily the remains of these. Such lacerations will almost always be found to radiate from the centre of the vulva, and to extend chiefly in the direction of the anus. No question which can come before a medical practitioner can present greater difficulty and delicacy than to decide upon the appearances in a case of alleged rape ; for on the one hand he has to assist in the punishment of an odious crime, and protect that all mankind holds dearest ; whilst on the other he has to guard against the mistaken or evilly disposed efforts to convict an innocent man. No charge can be made more easily than one of rape, and none is more difficult to disprove, and the statement of eminent jurists must always be borne in mind that in the assize courts there are probably twelve false charges for one that is genuine. This may look like an exaggeration, but I am by no means clear that it really is. Within a few weeks of each other the two following experiences occurred to me. A child, aged about ten years, charged her own father with having repeatedly had connection with her, the charge having been given through some women who were probably desirous of doing the man some mischief. The child gave her evidence with such precision before the magistrate, that it seemed as if there could be no doubt about it. The doctor who examined her, a man of considerable experience, had, however, great doubt as to the truth of her story, and he asked the magistrate for an independent examination of the genitals by myself. Without knowing anything of the story told by the child, and after a careful examination, I had no hesitation in answering the magistrate's question that it was utterly impossible that repeated connection could have taken place, and stating that the child's genitals bore not the slightest trace of ever having been touched. The charge was at once dismissed, and the child afterwards admitted that the story was concocted.

I happened to be waiting in an assize court, and was listening to a case where a man was charged with having committed a rape upon a child. Two medical witnesses were called, one for the prosecution, the other for the defence. One deposed that there were all the appearances of defloration, the other that the child showed no evidences of having ever been touched ; and, unfortunately, the judge seemed inclined to credit the former. The alleged injury was of quite recent date, and it was therefore suggested that a third and expert witness should be asked to examine the child, on behalf of the court. The result was an emphatic declaration for the defence, and the prisoner was at once discharged.

Clitoris.—The size of this organ varies very much, for in some women it is represented only by a depression in the anterior commissure, whilst in a few it is found to be really erectile, and representing in miniature the appearance of the penis. There can be no doubt that it is chiefly in this organ that the peripheral nervous apparatus is situated, by which the sexual erythism is produced, and it is not unusual to find patients com-

plaining, even in comparatively early life, of loss of power in this direction. In these cases, atrophy of the organ may be observed, and its consequent inaction may be the subject of a request for treatment. But as these cases have too often a moral complication, they present great difficulties, and unfortunately they are seldom amenable to the advice that they should be resigned to their condition. I have found the continuous current of great service in treating them, and it is best applied by a small apparatus to be worn at the parts.

Hypertrophy of the clitoris, is, so far as I know, congenital, though, of course, it is liable to increment at the period of puberty. I have seen it so large as to resemble an infantile penis, and to be capable, according to the statement of the patient, of distinct erection during sexual excitement; but I think that the stories we read of women having this organ so large as to be capable of having, and desirous of connection with other women, must be records of cases which I have already referred to, as men registered by mistake as women. The clitoris is peculiarly apt to be the point of origin of epithelial cancer.

No reference to this organ would be complete without a discussion of the practice of masturbation, of which it is the chief seat. This painful subject is usually involved in such mystery, and spoken of so seldom and so incompletely by medical authorities, that it is by no means easy to determine to what extent it prevails, how to discriminate its victims, or how to suggest a remedy. When discovered in a school or in a family, it strikes everybody with such horror that it is at once concealed and hushed up, instead of being treated, as it always ought to be, as a disease; and the unfortunate children who are discovered in the practice are regarded by their discoverers as having sunk to the lowest moral depths. It is a sad misfortune that all sexual questions are so completely hidden from children at puberty that they are driven to make discoveries for themselves, often with disastrous results. One of the greatest practical results of the discovery by Mr. Darwin of the descent of man from the animals which have gone before him, is that by it the sexual instincts, or as they are generally and most unfortunately termed, the sexual passions, are shown to be the most necessary as well as the most prevalent of all the instincts which have been evolved by the necessities of animal existence. The female organism has always been merely the vehicle for the maturation of the ovum, and for the reception of the fertilizing influence of the male; being, in fact, what we may call the passive factor in the reproductive act. For her part of the process, then, only enough of sexual passion or instinct is required to indicate to the male the stage at which his share may be effectually performed. For the male, on the contrary, a constant tendency to aggression is necessary that he may be in readiness at the time required. Further, the struggle for the survival of the fittest has constantly been carried out in its chiefest severity amongst the males of all animals, and only partially amongst the females; so that it has come to be that the physically fittest has necessarily been also the sexually most powerful. This requires no proof, for it is demonstrated by the enormous prices given by breeders of all animals for the best males compared with the prices obtained for the best females. In fact, through countless generations of all animals, the sexual instinct, above all others, has been developed in the males by the constant elimination of the least fit, and the subsequent success of the fittest. It ought to be, therefore, no matter of surprise that in the human race the sexual instinct is very powerful in man and comparatively weak in woman.

Another matter must here also be noticed. The females of all animals resist the advances of immature males, for the reason that the struggle of the fittest has taught the races that the offspring of such advances are less fit for survival than the offspring of the mature males. Any one who has kept poultry must have noticed how soon cockerels make advances to hens, and how persistently the latter refuse them, and how they punish the cockerels for the attempts until their perfect maturity has been attained. Considering these two great facts in animal life, it is not surprising that masturbation is very common amongst boys, and comparatively rare amongst girls. Indeed, if we are to believe some authors, and I must say I am inclined to do so, boys always discover the practice for themselves, and very few of them are free from it. I am quite certain, on the other hand, that it is rare amongst girls, and that it is generally the result of direct contamination. Sometimes, however, they discover it; for I have met with two instances of children, almost infants, one being only four years of age and the other six, where it was absolutely impossible that it could have been communicated to them, and in both of whom it was found to be utterly impossible to check it. They were both of defective intellect, a condition which I regarded as the cause of the masturbation, rather than, as might be more generally held, that the vice was the cause of the deficiency. I look upon it, in fact, as a reversion of moral type, for no one can have watched the habits of monkeys without having discovered that masturbation is almost universal amongst them in confinement. Whether it may be practised by them in their native woods is not yet known.

Between the period of puberty and the time when young members of the human race may legitimately follow out their instinctive tendencies, there is a number of years during which the male glands are active, and the males discover a method of relief. No such relief is wanted for the female glands, for they discharge their products without it. But if the rudimentary instinct be once directed into this artificial channel, it is often carried to great excess, and there can be no doubt that much mischief is sometimes done to the economy. The most pernicious effects are met with when the contamination reaches a congregation of young women, as in a girls' school. I have been consulted concerning endemics of this kind in both boys' and girls' schools, and have always found the chief difficulty to be that of persuading those having charge of the schools that the practice was a physical delinquency rather than a moral evil; and that the best remedy was not to tell the poor children that they were damning their souls, but to tell them that they might seriously hurt their bodies, and to explain to them the nature and purport of the functions they were abusing. In one instance, the head of a very large girls' school took my advice on this subject with the best results.

The evil effects of masturbation have been greatly overrated, thanks to a reticence on the part of those who know all about it, and this has permitted a disagreeable subject to fall into the hands of those who live by trading on the ignorance and misfortunes of their fellow-beings. In the case of men, it may and often does result in serious mischief, especially to those of weakly constitution. In women, I believe it is not often carried to such an extreme as to do any harm, though I have met with cases where serious injury has resulted; and I am quite certain that girls may almost always be induced to give the practice up when a reasonable explanation is afforded to them of the risks attached to it. I have now

under my care a lady who was educated in a convent in Belgium; where, according to her statement, the practice was prevalent, and where she was initiated into it at fourteen years of age. She voluntarily informed me that she has continued it ever since, though she has married and borne several children. She is now nearly forty years of age, and enjoys robust health. But there is another class of case well illustrated by two patients whom I have watched for some years. They are both slightly built and rather delicate blondes. They were both corrupted at school early in life. In one of them, an immoderate indulgence at a menstrual period brought on a hæmatocele, which has ever since been a source of ill health, and has rendered her married life infertile. In the other, a similar excess, soon after marriage, induced a miscarriage; a repetition of her indulgence excited a hæmatocele, with perimetritis; and to the same cause, I am sorry to say, we are obliged to attribute recurrent inflammatory attacks, which render her a chronic invalid. In neither of these cases has advice been of the slightest use, even though couched in terms of the strongest kind; but I am bound to say that such a disappointing result is very unusual.

The method of practising the vice is usually by the finger, but devices of a still more mischievous character have come under my notice. In young children, masturbation is often associated with defective mental development, and it should always be a ground for placing them under special care. In all establishments where the young of either sex are congregated, the system of separate cubicles should be employed; and children ought never to be allowed, under any circumstances whatever, to sleep with servants. In every instance where I have found a number of children to be affected, the contagion has been traced to a servant. I think it possible that in some inveterate cases clitoridectomy might be beneficial, but I have never tried it.

Meatus Urinarius.—This orifice is apt to be involved by any inflammatory attack, either of catarrhal or specific origin, which may affect the vulva. It is also sometimes the seat of a chronic inflammation, seen in elderly women, which does not spread away from the meatus, and which is the cause of great suffering. A few applications of nitrate of silver generally suffices for a cure.

The most common affection of the meatus urinarius is that for which I have used the name of vascular growth, and which has been variously described under the terms of "painful tumor of the urethra," "urethral caruncles" (Simpson), &c. The term I have employed seems to me to be the best, because the only constant features about these growths are that they are always at or very near the meatus, and that they are always vascular. As a rule they are painful, but I have seen many cases where the patients were wholly free from pain. They are very common, and they are not confined to any age after puberty; for I have removed them from young women of twenty, and from old women between seventy and eighty. They are always of a bright crimson color, bleeding on the slightest touch, and they are generally pediculated, the attachment being to the mucous membrane just outside, at, or immediately within the meatus. Sometimes the attachment may be a few millimetres up the urethra, so that only the apex of the tumor peeps out of the meatus. The shape of the tumors is generally somewhat angular, many of them resembling a cocked hat attached at one of its corners. I have never seen one larger than a pea, though Madame Boivin and others figure them as large as a bean, or even as a cherry. They are always very friable, so that when seized by forceps they readily break up. As a rule, they give

rise to much pain and discomfort on micturition, and they may render intercourse impossible. Sometimes, however, as I have said, they are absolutely painless. For their relief, the only remedy is removal by scissors, and care should be taken to remove a piece of mucous membrane along with the base of the tumor, though even with this precaution they are pretty sure to return. They are very frequently associated, in women at the middle period of life, with the vascular degeneration of the mucous membrane already described ; and, from a number of observations which I have made on their structure, I have concluded that they have much the same origin. The chief histological characters of these growths are the abundance of loops of capillaries, irregularly dilated and having very thin walls, with a singular deficiency of cell elements and fibrous stroma. I have also seen nerve fibres in them. These facts explain a great many of the features of these growths, and it is quite possible that they are progressive, in the same way as is the vascular degeneration previously described; for their recurrence is not the recurrence of malignancy, but appears to be rather the invasion of another though neighboring district.* I have seen no indication, however, that these growths ultimately cease to recur; for almost the last case in which I have operated was one in which, during a period of nearly forty years, they had been removed at intervals of every four or five years.

I have seen the meatus the seat of a stricture which was the result of cicatricial contraction. It was cured by slitting the urethra up for about a third of an inch. I have also seen an encephaloid growth originate at this spot, and after repeated removals destroy the patient.

Perinæum.—Abscesses of the perinæum may result from a chill received by sitting on cold, damp ground, from violence, from injury in labor, or from causes beyond the reach of discovery. The disease is to be easily recognized by the hard, painful swelling, and by the agony which ensues when the bowels are moved. These abscesses should be opened freely and early, for they are very apt to open into the bowel and form troublesome fistulæ in ano, requiring subsequent operation. The contents have that peculiar fœtor already referred to. Fistulæ resulting from perineal abscesses are often very troublesome. I have seen them running up between the vagina and rectum, and opening into the latter canal as high as three inches from the anus. In such cases there is some risk in dividing the whole tissue by the knife, for I have seen troublesome bleeding from an inferior hæmorrhoidal artery. I have adopted Dittel's elastic ligature with great advantage in such cases. It is not unusual to find more than one sinus, and then it is best to treat them one by one, as sometimes the division of one will cure them all. Perinæal fistulæ may also result from the passage of the contents of a pelvic abscess down alongside the rectum or vagina, a condition which will be considered more at length when I speak of pelvic abscess.

Laceration of the perinæum is the almost inevitable result of a first labor. Unless a painful fissure or a tender cicatrix be left from imperfect recovery, it requires no treatment. A fissure may be either divided or treated by caustic, and a tender cicatrix will be relieved by the occasional application of strong carbolic acid and the use of an astringent cerate.

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* The fact that they never reach any great size is in support of the view I have advanced, that they are really mere dilatations of the capillaries from the atrophy of the surrounding tissues.

Complete rupture of the perinæum is generally produced by some of the complications of labor which need not be referred to at length here. It is a distressing condition, for it deprives the patient of the power of exercising control over her motions, and it greatly favors the protrusion of the pelvic viscera. With the precautions which are necessary to prevent this accident, we are not here concerned, as they are within the province of the obstetrician. The remedy consists in paring the edges of the tear and fastening them carefully together. This should be done only after the tissues have completely cicatrized, at least four or six weeks after the confinement, for until then they are so friable that they will scarcely retain stitches. Care must be taken that the edges of the chasm are smoothly pared, especially at the angle, for otherwise a bridge of union may form, having beyond it a recto-vaginal fistula.

My method of performing this operation is as follows: Having had the patient's bowels well opened the day before, and the rectum washed out just before the operation, she is placed on her back, and the thighs held apart by two assistants. I then make two incisions about an inch and a half long, just at the margin of the skin and mucous membrane, and marking the edges of the torn perinæum. These will be more or less apart, according to the depth of the tear. They should be nearly parallel, but somewhat converging towards the coccyx. The knife is carried right through the skin down to the subjacent tissues, and the rest of the operation is done by strong and sharp-pointed scissors. These are introduced just under the skin at the upper end of each wound, and are run under the mucous membrane (*cutting nothing else*), about half an inch from the margin of the torn septum, so that the incisions run from each side inwards, meeting in the middle line, and forming a curve parallel with the margin of the septum. The lower lip of this wound is then seized by dissecting forceps, and the mucous membrane carefully raised from the subjacent tissues as far as the edge of the rent, *but not separated at that edge*, so as to form a flap hanging downwards. This flap is turned downwards and backwards into the rectum. A stout curved needle, armed with strong Chinese twist silk, is then to be introduced about a quarter of an inch from the centre of the skin wound on one side, and carried carefully through the tissues of the septum till its point is within a quarter of an inch of the middle line. The point is then to be brought out in front of the flap and passed into the septum again, at about another quarter of an inch on the other side of the middle line, and is then to be continued till it comes out at a point corresponding to its original insertion. The whole success of the operation depends upon this stitch, so that the utmost care must be taken with it. Two other stitches similarly introduced, but taking a less deep hold, are to be introduced, one in front of, and the other behind the main stitch, and all three must be in front of the flap. The stitches are then to be secured, beginning with the middle one, and they should be tied in the ordinary way. All such contrivances as chained and quilled sutures are a source of great discomfort to the patient, and frequent disappointment to the surgeon. I have never yet had a failure with this method of operating, not even to the extent of a minute fistula.

The rectum should be emptied by a small enema every morning for at least three weeks after the operation. The vagina should also be washed out twice daily with some slightly astringent injection. The stitches should not be removed until after the twelfth or fourteenth day. There is not the slightest need to make the posterior or lateral incisions through

the sphincter ani muscle, which have been recommended by Baker Brown and others.

If the case be seen immediately after the rent has been made, stitches may be applied without any preliminary paring; but this practice has never had a satisfactory result in my hands; for in all the cases where I have been called in to perform it, the tissues have been so bruised and the edges have been so ragged, that a satisfactory union has never been effected save by subsequent operation. It is, however, worth trying.

III.—VAGINA.

Before proceeding to discuss the diseases of this part of the female genital system it may be advisable to say a few words on the general methods of conducting examinations of women, for this is a subject of infinite importance both to patients and practitioners. Nothing shakes the confidence of a patient so much in her attendant as to find that in contrast with some one else under whose care she has been, either he displays a bungling want of readiness in making the examination, or that he gives her an amount of pain to which she was not previously subjected.

First of all, let me say that some amount of discretion is required in subjecting women to any process of examination, and for some methods the extremest caution is necessary. In the case of an unmarried woman there should be the clearest indications for the necessity before it is undertaken, and in the case of married women it is always advisable to know whether they have borne children.

One question I am often asked by practitioners—Do I ever examine a woman without the presence of a third person?—and I always answer that I do so without hesitation and just as often without as with. That cases have occurred where false charges have been made against practitioners of improper conduct during examination there can be no doubt; but that these should ever be made by women whose characters will bear investigation is altogether unlikely, and this forms our best protection.

One condition of examination, however, should never be entered upon without the presence of a third person, and this is the use of an anæsthetic; for even in the minds of the purest women there can be no doubt that delusions occur during the anæsthetic condition which retain strong hold of their waking moments. Any man, therefore, who administers an anæsthetic to a woman alone is like the priest who hears confessions in his study—he deserves any trouble he may get into, either for his folly or his crime.

In making any kind of an examination, either for a male or a female patient, it is advisable not to uncover any more of the body than is necessary. Thus, in making an abdominal inspection the bed-clothes should be turned well down all but the sheet, which should be carefully folded downwards so as to cover the pubes, and the night-dress should be raised no higher than necessary. This done, the eye should mark what points are

to be noted, the finger should percuss and palpate as lightly and as rapidly as a complete examination will allow.

If a vulvar inspection is necessary, one of two methods of placing the patient may be adopted—either on the back or on one of her sides. A great deal has been written in favor of one or other of these methods, but really each will be found of special service in special cases.

The objection to the position of the patient on her back is, that it involves very much more exposure than is necessary, whilst, if mere digital examination is wanted, it is much less convenient than the position on the side. It is, however, very useful in bimanual examination, which really cannot be completely made without the use of both positions. My usual directions to a patient are, that she should lie upon her left side, a little turned over on her face, her knees drawn well up and her feet placed well forward. I then draw the dressings well back to expose the vulva and anus, and placing the fingers of my left hand upon the right labium and those of my right hand upon the left (or lower labium) I gently separate them. This process enables the examiner to determine whether it is necessary to proceed to a vaginal examination. If there is such an amount of discharge as to form a condition requiring investigation, then a further process must be entered upon. If, on the contrary, the seat of the discharge should be evidently at the vulva—as, for instance, in gonorrhœa—further examination had better be delayed unless special precautions against the infliction of pain be taken. During this vulvar inspection the patient should also be asked to strain, as if at stool, and thus any prolapse or protrusion which she may have complained of will be made manifest.

For a vaginal examination a numberless variety of contrivances have been brought into use, but, as with all other instruments, here simplicity is the greatest recommendation. I have therefore discarded all complicated specula having blades and flaps, hinges and screws, and I find nothing so satisfactory as the simple tube-speculum of Fergusson and the duck-bill of Marion Sims. The former I prefer made of toughened glass (de la Bastee's), and without the silvered coating. The clear glass is quite as good for the purpose of examining, whilst the absence of the varnish lets the examiner know at once if his instrument is quite clean and free from chipping. Both these conditions are very essential, especially the latter, for I have known injury done by the chipped edge of a speculum. In introducing this tubular speculum a little knack is required not to give pain, and this consists in pressing the long lip of the tube against the perinæum, gently rotating the instrument during its upward passage. For all practical purposes two sizes are enough, one for women who have not borne children, an inch and an eighth in diameter; and one for those who have borne children, an inch and five-eighths. It is useful also to have the instruments of two lengths, especially the larger size, and those I have found best are three inches and a half, and five inches and a half in length. The short, wide specula are very useful in many operations; indeed, in vesico-vaginal fistula I prefer them to all others.

These specula are by far the best for displaying the condition of the os and cervix in the great majority of women, and they enable us to see the whole of the mucous surface of the vagina either during their insertion or withdrawal. But it must not be supposed that they will do for every case, for that is not true of any instrument. Indeed, I have had one patient whose os uteri I have tried several times to bring into view with a variety of specula, and have never yet succeeded.

The duck-bill speculum is an extremely useful instrument for inspection of, and operations on, the vaginal walls, and, in some exceptional cases, for examining the os and cervix. It also has the further advantage that it can be introduced easily and without pain. Its smaller end can be used for examining the rectum. All specula, before being introduced, should be well greased, and the best material for this purpose is undoubtedly vaseline.

Digital examination of the vagina requires very little to be said beyond the cautions, to grease the finger well, as much in the interests of the practitioner as of the patient, for the avoidance of poisoned fingers; and to introduce the finger very slowly and gently under all circumstances, but especially when the patient is a virgin, or where tenderness is complained of. In the great majority of instances, and especially to the skilled finger, digital examination reveals as much as can be learned through the speculum, and often more. To introduce the speculum in a case of suspected cancer is generally unnecessary and often mischievous, on account of its causing hæmorrhage. In displacements the speculum is of course wholly valueless, and its use will be found to diminish in proportion to the surgeon's experience, and finally to be employed chiefly as a means of treatment.

It is impossible, by mere description, to convey instruction in the matter of diagnosis by the finger-tip in the vagina. The first thing for the learner to do is to make himself familiar with the normal parts, and especially to be able to recognize the position and size of the fundus. This done, he will readily discover the presence of abnormal fulness in front or behind, or any deviation from the proper direction of the uterus. Let him bear in mind that the os and cervix should point slightly backwards, and that the fundus should be felt above and in front of the cervix when the bladder is empty, and he will save himself much trouble. Behind the cervix nothing should be felt if the rectum is empty. The uterus should yield freely to pressure, upwards, forwards, or backwards; and any deviation from this rule is to be carefully noted.

Bimanual examination may be made in the same position (patient on left side), and many useful facts may be noticed with the right fore-finger in the vagina and the left hand over the abdomen. In this position the patient strains less than when she is on her back, and if there be a small tumor rising, or which has risen out of the pelvis, its relations and its mobility can be readily determined. In this position, also, the position of the uterus with reference to a tumor can be usually very easily made out, especially if the patient be anæsthetized. When the patient is upon her back the conditions of the broad ligaments, the existence in them of any effusion, and, if the patient be not obese, the condition of the ovaries can be readily ascertained.

Rectal examination, both when the patient is on her side and on her back, very often gives material assistance in our diagnosis, especially in cases of hæmatocele and other effusions in the broad ligament, especially when the effusion is on the left side, when the effusion may be felt surrounding the rectum like a ring. The posterior surface of the uterus may also be explored in this way, and the position of a myoma may be made out.

Examination of the uterus by the sound is a method which must be employed with great care; and so much emphasis must I lay upon this, that I must admit that there is a great deal of probability in the statement of some authors, that the sound is an instrument which has probably

done as much harm as good. In the hands of the experienced practitioner its use is but rarely required, and in the hands of the inexperienced it should rarely be found. For the diagnosis of mere flexions and versions it is not needed, and its use should be almost confined to those cases where it is necessary to know the relations of a tumor to the uterus. Here it is useful in three ways: it may show that the cavity of the uterus is of unusual length; it may show what bimanual examination may fail to make clear, that the uterus is closely associated with, but is not involved in, the tumor; or it may show that when the tumor is moved above the pelvic brim, that between the tumor and the uterus there is a pedicle, this being indicated by the greater or less readiness with which it moves with the tumor. For the mere measurement of the uterus the sound is rarely required, unless it be in cases where it is considered desirable, for legal purposes, to fix the date at which a suspected confinement has probably occurred. For the diagnosis of simple subinvolution it should not be necessary.

The best form of the instrument is a slender rod of soft nickel, nine inches long, with an olivary bulb exactly five-thirty-seconds of an inch in diameter, and with a mark two and a half inches from the end, to indicate the normal length of the uterus. From four inches from the bulb to that enlargement it should be bent into a gentle curve of about eight inches radius. There should be a round button for a handle, cross-cut on one side, to show the direction of the curve of the instrument.

There are two golden rules for the use of the sound: never use it on the first occasion of seeing a patient; and never until it is perfectly certain the patient is not pregnant.

In some exceptional cases, as when there is a tumor or other substance in the bladder, or when there is atresia vaginæ, important information may be obtained by passing the sound into the bladder, and an index-finger into the vagina or rectum.

Inflammations and Ulcerations.

What I have said already of the inflammations and ulcerations seen on the vulva may be taken as also applicable to the vagina.

I have, however, to record a case unique in my experience, and of a kind not mentioned by any author known to me, and which I regard as one of lupus affecting the vagina. The following notes are taken from the hospital case-book: Patient 32 years of age; after a confinement seven years ago, she began to have sores inside the passage, and when the child was only four months old her milk disappeared. It had never been very abundant, and during her short lactation her health had become very bad, and she had become very much emaciated. After some months she again became pregnant, and then her health improved, and the sores healed up. The same order of events occurred after her confinement as have been already described, and this has been repeated in two subsequent pregnancies. She has been under treatment at various hospitals, but has never obtained any marked relief. When the sores are in existence she always gets very thin and out of health.

On examination, I found little masses of tubercle existing in depressed glistening cicatrices of old ulcerations of the mucous membrane. The present ulcers possessed no such masses, and were mostly curiously linear

scores, entering the mucous surface in an oblique direction, and leaving one lip of the score like a flap, under which the ulceration was going on. Three or four of these flaps were lying almost parallel to each other, forming in this way a series of fringes. The edges of the ulcers were not indurated, and the discharge from them was a thin, watery pus. I put the patient on a treatment of cod-liver oil and arsenic, and applied nitrate of silver locally. She improved in health, and then becoming, I suppose, pregnant, she was lost sight of.

Tumors and Prolapses.

All the tumors usually met with in the vagina have already been described in connection with the vulva, except papilloma. This disease consists in an alteration of the mucous membrane, whereby the papillary elements are greatly hypertrophied. It is found most frequently to affect the vagina just within the vestibule, but I have also found it on the nymphæ, and the area affected is generally not very large. It appears red and velvety, bleeding easily, and it is exquisitely tender to the touch. If carefully dried, its nature can be recognized by the minute finger-like processes into which the papillæ have become elongated. If a piece be removed and examined by the microscope, it will be found that the inner structures of the papillæ are chiefly affected, the connective tissue, stroma, the nerve-fibres, and the vessels, being all thickened, whilst the epithelial covering appears to be quite normal. The papillæ are not only elongated and thickened, but they become branched and even dendritic. The chief symptom, pain, is clearly due to the pathological changes, and it is often so acute as to render the patient's life a burden to her. I have seen many cases of papilloma set down as vaginismus. The disease may occur at any age, and can be treated effectually only by complete removal, either by caustics, such as the red-hot iron, terchloride of antimony, or a saturated solution of chromic acid; or, better still, by the use of sharp-curved scissors.

Epithelioma, when met with in the vagina, is usually an extension of the disease from the cervix, but sometimes it arises in the vagina independently, its most common seat in this case being the flexure at the posterior wall. It generally perforates the walls and produces a fistula.

A very unusual form of vaginal tumor is seen in the occurrence of myoma, or fibro-myoma of a polypoid form. Such a case presented itself at the Hospital, in October, 1878, in which the growth was as large as a Mandarin orange, protruding from the vulva, and attached by a thick pedicle to the vaginal wall within the left labium, and near to the posterior commissure. It was readily removed by the scissors. It had been growing for a long time, was very hard and solid, and presented all the characters of ordinary myoma.

Dr. L. A. Neugebauer has collected thirty-four such cases from various sources, and in a paper on the subject (Prager Vierteljahrschrift, 1877), concludes that vaginal polypi are nearly always myomatous, very rarely sarcomatous; that they occur with attachments to all parts of the vaginal walls, and that they are not confined to any special period of life.

In speaking of the various forms of prolapse which affect the vagina, I have adopted a slightly different nomenclature from that generally in use, but I think the additional convenience in classification more than

compensates for the innovation. I propose to class all these displacements, with one exception, under the name of vaginocele, and to define the variety by prefixing the name of the structure specially implicated. Thus by far the most common of these prolapses is the cystic vaginocele, which consists of a distention of the trigone of the bladder, accompanied generally, and I believe always in the first stage, by thinning of the wall. In the milder forms it consists of an oval swelling, which may be visible on examination only when the patient strains, or when the bladder is very much distended; or it may form a permanent tumor, extruding from the vulva, with the mucous membrane transformed almost into skin, the wall of the bladder very much thickened, and then it generally is a source of considerable discomfort. This prolapse is, according to my experience, mainly due to the habit, so prevalent among women, of retaining the urine in the bladder until it is over-distended. The differences in the anatomical relations of the bladder in men and women give rise to very different habits in this respect. In the former, the neck of the bladder and the trigone are firmly supported, so that over-distention can be accommodated in the upward direction only, and the weight of the superincumbent viscera makes it much sooner painful than in women. In the latter, a large amount of accommodation for over-distention can be obtained by dilatation of the unsupported lower wall, especially if the vagina has been dilated by the birth of children. Our social habits make it much easier for men than for women to empty their bladders with sufficient frequency, so that women become accustomed to employ their additional accommodation at the expense of their organs, and the trigone being mechanically the point of least resistance, it becomes gradually dilated. As this dilatation proceeds, it becomes more and more difficult to empty the bladder completely, so that ultimately a residuum of urine is retained at the point of dilatation, which decomposes, and gives rise to chronic catarrh of the bladder, reducing the patient to very much the same condition as we find in men with enlarged prostate. This inflammation chiefly affects the dilated sac, so that the walls become thickened, and, finally, the vaginocele becomes irreducible. In private practice, cases so bad as this are very rare; but in hospital practice we see them frequently, their prevalence there being due to the extreme carelessness of women in the lower rank of life about the proper performance of their functions. In the earlier stages of this form of prolapse little inconvenience is experienced, and the patient is generally made first aware of it by the sudden discovery of the lump. If she applies for advice then, and is properly treated, the deformity is very easily cured. She must be instructed never to allow the bladder to remain for more than eight hours without being emptied, and not so long as that if she can manage it; and she must be provided with a properly fitting support. This consists of the smooth ebonite ball pessary, made for me by Krohne and Sesemann, which has no holes in it, and which is fitted with a loop of very strong whipcord. The old-fashioned ball pessary was furnished with a number of holes, through which mucus flowed, and, becoming decomposed in the cavity, gave rise to the most offensive fœtor. If the loop be not properly fastened and made of very strong flaxen whipcord, it will break, and then in all probability the patient will wear it for some years without removing it. The ball should be removed every night, the vagina well washed out with a lotion of one per cent. of permanganate of lime, and the pessary replaced in the morning. By a perseverance in this treatment for some months, or even years if necessary, every patient so affected will be at least made comfortable, and the great majority of

cases may be permanently cured. In the worst class of cases, where there is a chronic catarrh of the bladder, this must first be cured by injections, *into the bladder*, of solutions of one or two per cent. of neutral acetate of lead, the bladder being first completely emptied of urine. This treatment may easily be carried out by the patient herself after she has been taught how to pass the catheter. If the protrusion be irreducible, and the inconvenience caused by it be very great, I should not hesitate to remove a piece of the whole thickness of the wall of the bladder, of appropriate size, and close the wound as in a fistula. But this is manifestly a form of treatment to be reserved for the very worst cases only, and for others I do not believe that any operative measures are necessary. A variety of ingenious proposals have been made for the cure of cystic vaginocele, all depending on the principle of removing a piece of the vaginal mucous membrane, and by bringing the edges together temporarily to diminish the prolapse. I say temporarily, because for any permanent purpose all such operations are a delusion and a snare, on account of the practically unlimited extensibility of the vaginal mucous surface as long as the producing causes are at work.

Recto-vaginocele is of the same character, and is produced by much the same kind of habit, in the matter of neglect of the periodicity of function, as cystic vaginocele. The terrible carelessness of the majority of English women about the evacuation of the rectum is scarcely credible, and can only be fully understood by those who have had experience in the out-patient room of a hospital for women. Many women do not have their bowels opened oftener than once in ten days, and to accomplish this they require some purgative. Like every other habit, the use of the purgative grows with the need of it, until we cease to wonder at the story of the patient who used to take a breakfast-cupful of pills once in every six weeks. Regularity of intestinal evacuation is a mere matter of habit, and there is very rarely any need whatever for the habitual use of aperients. I always instruct my patients to retire to the closet immediately after breakfast, and never to omit doing so. For the first week or two the efforts may be futile, and it may be necessary to direct the use of a suppository of gamboge or aloin about half-an-hour before breakfast, or the use of a small enema. But perseverance will enable these artificial aids to be dispensed with, and if once the habit is fully established it is not easy to discontinue it. The use of the ball pessary, formerly described, will greatly assist in the cure. In some specially careless women we find both cystic and recto-vaginocele.

Entero-vaginocele is where there is a vaginal prolapse behind which there is intestine. This is occasionally met with simply as a distention of Douglas' pouch; but in the great majority of the cases it is associated with complete protrusion of the uterus and inversion of the vagina, a condition which will be spoken of in connection with the displacements of the uterus.

Occasionally the canal of the urethra becomes dilated so as to form a small oval tumor, giving rise to considerable discomfort by wetting the patient's dress with the small quantity of urine it contains, a few minutes after she has ceased micturating. The dilatation may also be accompanied by chronic urethritis. A speedy and safe cure may be effected by removing an elliptical piece of the mucous membrane, with its long axis in the direction of the urethra, and bringing the edges together by stitches.

In the *Lancet* for 1875, I recorded a case of sacculated dilatation

of the urethra, which closely imitated a cystic vaginocele of the worst type, and which forms, so far as I know, an affection not previously described.

Mrs. B., mother of a large family, had suffered for many years from a protrusion from the vulva, about as large as an egg, exceedingly painful and quite irreducible. She passed large quantities of very fœtid pus from the bladder. The protrusion looked like an ordinary cystic vaginocele, was very hard, and when firmly pressed a large quantity of fœtid ammoniacal pus escaped from the urethra. It was clearly, therefore, not an ordinary cystocele, but probably a sacculation of the urethra, and the only benefit to be obtained was by its removal. She was accordingly placed under ether, and the lower half of the protrusion was removed by a cut of the scissors. This opened a large cavity lined with thickened corrugated mucous membrance, and at the bottom of it I found an aperture in the lower wall of the urethra, about half way between the external orifice and the neck of the bladder, large enough to admit a number 9 or 10 catheter. The whole of the lining membrane of the sac was removed, and the cavity closed by deep sutures. The wound healed rapidly, and a complete cure resulted. My only explanation of this remarkable case is the supposition that the sac was congenital.

Wounds of the vagina are always the result of direct violence, which may be either accidental or intentional, or, in a few rare cases, the result of surgical incompetence. It has fallen to my lot to see a considerable number of cases of such injury, and some of these cases were of extreme interest both on surgical and medico-legal grounds. Of those which were accidental, I have seen two cases in which the injury, in one case fatal, was unquestionably due to the patient's falling, whilst in a semi-sitting position, upon an upright stem. In both cases the injury was at the flexure of the vagina behind the uterus, and in both cases I think the peritoneum was injured; but as one recovered, this is, in that case, a matter of conjecture. In the other, death took place in five days from peritonitis, and a small fragment of the patient's dress was found in the peritoneum. No other organ was injured.

Sometimes we have serious ruptures, in a few instances known to be fatal, inflicted during coition, where the male organ has been disproportionately large; but the chief trouble with these marital ruptures is, primarily, the hæmorrhage, which may be serious, and, secondarily, the interference with their healing by frequent repetition of intercourse.

Of the cases of intentional wounds of the vagina, the most common are those in which the injury is done during an attempt at another offence, the procuring of abortion. This crime is becoming fearfully common in our manufacturing centres, and the difficulties which present themselves in procuring convictions, render nearly all the efforts of the police ineffectual to stop it. The instruments employed in this nefarious practice are nearly always improper and dangerous, so that every now and then we find death occurring from a punctured wound of the vagina, injuring the peritoneum. As these wounds are always small, and as the examination is usually made some days after their infliction, much care is required to find them in cases where there is suspicion. They are nearly always behind the uterus. One horrible case of intentional wounds of the vagina came under my observation many years ago, where a man murdered his wife during her drunken sleep by pushing a walking-stick up her vagina, through the posterior flexure and up through the liver and diaphragm.

Many of the other abdominal viscera were greatly injured, and the woman died from hæmorrhage and shock. The case of course came before the criminal courts, and, hardly credible though it may seem, an eminent physician was actually obtained who gave evidence that the wounds might have been suicidal. The jury, however, convicted the prisoner of murder.

There are a few rare cases on record, and it is fervently to be hoped that they will grow rarer as the practitioners of medicine become better educated, where wounds of the vagina have been made by the use of obstetric implements in the hands of unskilled operators, or in the hands of operators whose skill has been undone by intemperance. One such case I have had the misfortune to witness, in which there is reason to believe that a blade of the forceps was forced through the posterior flexure of the vagina. The expulsive efforts of the patient forced down the intestines through the wound; and the post-mortem proved that the attendant must then have torn down almost the whole length of the intestine, stripping it from the mesentery, and actually dragging the peritoneum off the kidneys and posterior abdominal walls. Strange to say, at the trial, a long array of skilled witnesses appeared for the defence, some of whom were hardy enough to declare that the procedure was a proper one under the circumstances, and that if they wrote books they would not hesitate to recommend it. The conviction and sentence which followed showed that the judge and jury were of a different opinion.

The vagina is apt to be ruptured during labor by the continuance of a disproportion between the canal and the fœtal head, but there can be little doubt that Dr. McClintock is right when he says: "On very many occasions the vagina has been torn by attempts to force the hand into the uterus for the purpose of turning the child, or of rectifying some real or fancied malposition of the head. It has also been lacerated by the premature or unskilful use of the forceps." The treatment of all such cases is clearly laid down by McClintock, and from it I think there can be no appeal. Having made "sure that no portion of gut has prolapsed through the rent, we should next endeavor to place the edges of the laceration as accurately in contact as can be done under the circumstances." *Under no circumstances whatever* can cutting the intestines be justified, for McKeever's celebrated case can always be quoted, in which, when it was found that four feet of intestines protruded and could not be returned, the intestine was left alone and sloughed, and the patient recovered with a fœcal opening into the vagina.

In cases of chronic irreducible entero-vaginocele, the wall sometimes ruptures from sudden strain, and the intestines may be protruded, as in a case narrated by Dr. Fehling, of Leipsic, in the Archiv für Gynæcologie, Vol. VI. p. 103, a case which has obtained some notoriety from its having been adduced in court by a widely-known obstetrician as an instance in support of the practice of cutting off protruded intestine in cases of vaginal wounds, though it was hardly found to be applicable in that direction.

Foreign bodies in the vagina are either such as are placed there by the silly practices of young women of a libidinous tendency, or such as are left there, having been placed by a medical practitioner, by the carelessness and inattention of the patient. In the first class the most extraordinary substances are found, such as hair-pins, tooth-picks, and shaving-brushes, and sometimes these have been allowed to remain in their unex-

pected position for years, the shame of the patient hindering her from asking for advice until some disaster happens which renders further concealment impossible.

I have met repeatedly with cases where intra-vaginal supports of various kinds have been left unattended to in the vagina for years, until serious accidents have arisen from their presence; and therefore in introducing any kind of mechanical contrivance into the vagina, care should be taken either that it is of a kind which the patient can remove and replace herself, or that injunctions should be given that she should have it seen to from time to time. Some years ago a woman came to me in a deplorable state from a pessary which she had worn for seventeen years, without having had it once removed during that time. It was one of the hollow box-wood ball pessaries, closed at the end by a screw plug. This plug had come out, and the wall of the bladder had grown into the hollow till it formed a large polypus. The outside of the pessary was coated with calcareous matter nearly half an inch in thickness, so that it was not only difficult to remove the pessary, but it was even difficult to make out what it was. I broke it up by means of a lithotrite, and removed it in pieces, discovering, as I did so, the polypoid growth of the bladder, which was fortunately not injured.

Shelf pessaries are very risky if left unattended to, and accidents have twice occurred in my practice owing to the negligence of the patients in presenting themselves for inspection at intervals. One patient, a very stupid Irishwoman, presented herself two years after I had placed a shelf pessary for an enormous entero-vaginocele, and I found that she had a large hole into her rectum, and another into her bladder. She, however, expressed herself as perfectly satisfied, and declined all operative interference. Even ring pessaries are not free from danger if neglected; indeed, no pessary is.

Vaginal fistulæ, when not due to cancerous ulceration, are always caused either by an acute laceration of the wall, or, what is much more frequent, by the continuous and long-sustained pressure of some neglected instrument, or of the fœtal head in labor. The latter is by far the most frequent of all the causes; and the one fact that very few operations for vesico-vaginal fistulæ are paid for, is sufficient to show that very many of these cases arise either from neglect on the part of the patient or of the patient's friends to procure efficient assistance at the labor, or from an inexcusable delay on the part of the accoucheur in assisting the natural efforts by instrumental interference. In some cases, however, a fistula seems inevitable, for every now and then we meet with a case where the labor has been comparatively short, yet where the separation of a slough leads to the establishment of a fistula. In the humbler class of patients, a great majority of the cases occur in primiparæ, and are unquestionably due to the patient's concealing, as long as possible, the fact that they are in labor, they being unmarried. One case, which I utterly failed to improve in any way, had the whole vagina destroyed by sloughing, so that the rectum, ureters, and uterus opened into a common cloaca about two inches deep, with walls of cartilaginous hardness. In such cases the damage is nearly always very extensive and very difficult to remedy. In married women, especially in multiparæ, the fistulæ are generally of a different stamp altogether, arising usually from pressure of the bladder between the fœtal head and the sharp angle of the symphysis pubis. The slough in these cases is seldom extensive, and is usually situated high up. The subsequent aperture looks as if it had been punched in the septum, and

this is by far the most common form of vaginal fistula. Sometimes it is so high up that the aperture is within the cervix, constituting the variety of utero-vesical fistula. Such fistulæ are very difficult to remedy; and in one case where I assisted the late Sir James Simpson, he was obliged ultimately to close the cervix and allow the patient to menstruate through the bladder, a course which was found to be accompanied by no great disadvantage, whilst it had the very obvious recommendation that it most effectually prevented any recurrence of the cause of the fistula; yet, singularly enough, a case is narrated by Mr. J. R. Lane where a patient became pregnant after this operation had been accomplished, to all appearances with absolute completeness.* Cases of urethro-vaginal fistula have been mentioned, one case being notable as having occurred from the injury to the ureter by the needle used to close a utero-vesical fistula in the hands of Dr. Bozeman. The late Professor Simon, of Heidelberg, had a case, which I saw, where a urethral fistula was left in the median wound after an ovariotomy, and which he cured by the bold and radical step of removing the kidney corresponding to the injured ureter. The case is narrated in his "Chirurgie der Nieren," Erlangen, 1871.

Urethro-vaginal fistulæ are rare, and, in my experience, are always the result of direct injury. In one notable case which has recently been under my care, a surgeon performed a somewhat eccentric lithotomy on a patient by slitting up her urinary tract from near the meatus urinarius as far as the cervix uteri, leaving only about a quarter of an inch of urethra intact. To close the large aperture as far forward as the neck of the bladder was an easy matter, and I succeeded at the first attempt; but to close the neck of the bladder and urethra required many repeated trials. I did not succeed until I made a false urethra to one side of the original canal, by passing a drainage-tube into the bladder, a process which was an original idea on my part, but which I find was proposed long ago by Baker Brown, and others. This operation was perfectly successful, and the patient, after having spent nearly ten years of her life on a bed-pan, can now retain ten or twelve ounces of urine. The case is detailed in the Transactions of the Obstetrical Society of London for 1876.

Recto-vaginal fistulæ are not very common, unless of cancerous origin, only three having come under my notice, and of these, two were the result of neglected pessaries. The third seems to have been the result of tertiary syphilitic disease, and was associated, as these fistulæ often are, with stricture of the rectum.

However caused, with the exception of the cancerous cases for which there is no cure, all fistulæ depend for their remedy upon very simple principles, in the carrying out of which, however, very considerable ingenuity is often required on the part of the surgeon. These are, that the edges of the fistulæ shall be carefully and smoothly pared through the whole thickness of the wall, that the edges thus treated shall be carefully and accurately adapted, being secured by some material which shall not cut its way rapidly through the tissues, and that when the bladder is implicated the urine shall be allowed a free and constant exit until the wound is healed.

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* Jobert de Lamballe's plan of slitting up the cervix in order to reach the opening —in other words, enlarging the fistula—will sometimes be found of great service.

For the first part of this process, no instruments are equal to the variable knife of Marion Sims and the jointed scissors of Heywood Smith. I can scarcely imagine any accessible fistula which could not be treated by them. For the adaptation of the edges, there is nothing so good as perfectly annealed silver wire, secured by Aveling's tube and shot arrangement, or by simple twisting. For the passage of the sutures, by far the best needle is one which does not, as far as I know, bear specially the name of any gynæcologist, but which is a marvel of neatness and efficiency, and may be called the variable tubular needle. It is supplied by Krohne and Sesemann, or Mayer and Meltzer, of London, instrument-makers whose names I mention because they are peculiarly successful in the manufacture of gynæcological apparatus. It is provided with twelve points, having various lengths, directions, and curvatures, so that there is scarcely any direction in which a stitch may not be passed; and from a drum at the end of the handle a continuous length of wire is passed by means of a milled wheel. This needle has been to me of the most signal service. The specula required for such operations are very various. The most generally useful are the duck-bill specula of Sims and Simon; but I have often found an ordinary tubular speculum quite as good as any other.

Upon the use of the catheter after operations for fistula, opinions differ; but I can only express my own strongly in favor of it, if used with proper care; but sometimes recto-vaginal fistulæ are met with as the results of tearing of the septum during labor. These are always small in size, and situated just within the sphincter. They are troublesome to cure, and the easiest way to deal with them is to make the opening free by dividing the perinæum up to it and dealing with the case as for perineorraphy. I have seen a careless nurse push a catheter so far in as to pass through the wound, and I have also seen a wound torn open by over-distention of the bladder some days even after the stitches had been removed. The safest and best catheter is the self-retaining convolvulus of Mr. W. D. Napier, having one of his movable balls run on it outside, to prevent its being passed in too far. This instrument is one of the most ingenious surgical contrivances I have ever met with.

Recto-vaginal fistulæ require the rectum to be very carefully emptied by enemata every day, or even twice a day after the operation, for any strain by engorgement will prove fatal to the success of the operation. Stitches should never be removed till the tenth or eleventh day, and even then it must be done with care. The injection of a little milk into the bladder or rectum will at once display any leakage. In cases where there is such destruction of tissue that no hope can be entertained of repairing the organs by the ordinary method, closure of the vagina may yield some amount of comfort to the patient, especially if the defect be in the recto-vaginal septum. It is, however, but a clumsy expedient, and every other plan which ingenuity can suggest should be tried before recourse is had to it. The closure may be complete or only partial—that is to say, only just below the seat of the fistula, according to Simon's plan of kolpokleisis.

Occasionally we find that peri-uterine hæmatoceles which have suppurated, or collections of matter in the broad ligament, discharge through fistulous tracks into the vaginæ, and become sources of great danger. I have found it always best to secure free drainage from the cavities by opening up the fistulous passages; and for the purpose of avoiding hæmorrhage, this is best done by the elastic ligature passed by some such

arrangement as that devised by Mr. Allingham. In the first volume of the *Lancet* for 1871, I have detailed such a case.

Vaginismus is a term which has been greatly abused, for it has been made to stand sponsor for a great deal of ignorance and insufficient examination. When the word was first coined by my friend Dr. Marion Sims, he evidently meant it to apply to those cases in which the orifice of the vulva is so hyperæsthetic as to render the patient wholly unfit for her sexual functions, but in which no other explanation can be offered than that of a mysterious spasmodic contraction of the sphincter vaginæ muscle. Even in such cases it can be regarded only as a symptom, and not as a disease; but as at present employed, especially in a recent English text-book, it is elevated into a distinct position in nosology. When a woman complains that intercourse hurts her so that she cannot submit to it, the surgeon may at once make up his mind that there is some definite cause for her condition, and that if he looks with sufficient care and with the eye of experience he will surely find it. I have had a large number of cases sent to me as vaginismus, for the purpose of having the operation of division of the sphincter muscle performed, but I have never yet performed it; for the simple reason that I have always been able to find a more tangible cause for the patient's distress than the hypothetical contraction of the sphincter muscle. By far the most common causes of the patients' sufferings in these cases are the fissure resulting from marital rents, or too frequent intercourse, resulting in excoriations of the nymphæ, or chronic vulvitis. The great majority of these cases are cured by the use of simple cerate and the restriction of intercourse within moderation. Other cases will be found to be due to painful warts, urethral caruncles, or patches of the vascular degeneration of the mucous membrane already described. This latter cause is especially frequent near the climacteric period, and a patch the size of a millet-seed will be found enough to give excruciating agony. A few months ago a lady came under my care from one of the northern counties, upon whom it was proposed to perform division of the muscle. I found a small patch, touched it with carbolic acid, advised her to use cerate, cautioned her that the symptoms would probably return in a few months, and that they would need fresh applications of the acid; but up to the present moment she is perfectly free from all discomfort. Cases of true vaginismus may occur, but I must assert that as yet they are quite unknown to me; and it seems just as reasonable to set cases of acute retinitis down under the prominent symptom of photophobia, as to class the cases I have referred to under vaginismus.

Malformations of the vagina are brought under our notice chiefly at three periods of life—during infancy, at puberty, and at the time of marriage. Those seen in early life are chiefly such as are confined to the vestibule, though occasionally a case of atresia is brought to us in an infant. In such a case, the advice always to be given is to wait till puberty, for before that time nothing can be done with safety or advantage, and it must be borne in mind that until that time no exact decision can be arrived at as to whether the case is one of mere closure of the canal or of congenital absence of the more essential organs.

At the time of puberty, or more usually at the age of sixteen or seventeen, the cases of malformation brought to us are nearly all those in which the internal organs are normal, but where there is some hindrance to the escape of the menstrual fluid. In these cases, attention is usually attracted by the extreme pain the patient suffers at the monthly intervals,

without any corresponding external appearances; but sometimes even this is not sufficient to induce the parents to seek special advice, and the poor child may have to endure her miseries for a year or two until the discovery of an abdominal tumor thoroughly alarms them. It will hardly appear credible, but last year I operated upon a girl for hæmatokolpos, aged eighteen years, who had suffered from all the symptoms of atresia for two years, had been admitted twice into a large hospital, and dismissed each time with her condition unrelieved, because she never was examined. The monthly pain in these cases is sometimes very terrible, as indeed may be well appreciated if we bear in mind the great expulsive power of the uterus, which seems under such circumstances to be overcome by the force of a hydraulic apparatus still more powerful. The menstrual fluid is poured into the uterus and vagina, if that be not wholly obliterated, and distends them in spite of the powerful muscular walls. During the intermenstrual periods, the more fluid parts of the blood seem to be absorbed, leaving behind a characteristic treacly fluid which distends the cavity. This increases in quantity every month, and may go on till the uterus approaches the size it has in the fifth or sixth month of pregnancy. If no menstrual flow has ever appeared, if there has been the constantly repeated monthly pain, and at the same time there is evident imperfection in the vaginal canal, the diagnosis is clear. But in some rare instances, as in one published by me in the *Lancet* for 1876, there may be a kind of menstruation going on at the same time, which greatly complicates the diagnosis, in a way to be afterwards described when I refer to the malformations of the uterus. The degree and kind of the atresia may vary very greatly, so as not only to make the diagnosis difficult, but to make it far from easy to decide what the treatment shall be. When merely the hymen or a narrow zone of the vagina is affected, so that the tumor can be felt by the finger in the rectum coming low down towards the site of the obstruction, an operation is very easy. But when the atresia amounts practically to an absence of the vagina, so that a sound in the urethra can be felt in the rectum, as if there was only a single layer of membrane between them, operative measures are difficult, risky, and by no means certain to give permanent relief. One such case was sent to me from Wales, and the tumor seemed so high up that it would be impossible to reach it safely between the urethra and rectum. I therefore opened it in the rectum, and with the best results. In another case from Herefordshire, placed under my care by my friend Mr. Shirley Palmer, where the tumor was not quite so high up, but where there was no trace of a vagina, I performed a very careful and elaborate dissection for about three inches upwards, having one finger in the rectum and a sound in the bladder; but although the patient made a complete recovery, the difficulty of keeping the passage open is so great, the pain of wearing instruments for the purpose is so unendurable, and the likelihood of any such artificial opening ever being capable of use as a vagina is so small, that I shall never be induced to repeat such an operation. If the site of the occlusion extends upwards more than two inches, I should always advise that the opening for discharge should be made into the rectum, and that all ideas of marriage be abandoned.

In the performance of all these operations, the question has been much debated, whether the aperture into the cavity containing the menstrual fluid should be free, so as to admit of rapid and complete evacuation, or whether the fluid should be drawn off gradually by the aspirator. I find fatal results recorded in the case of both of these plans. I have

used them both, and have not lost a case out of six operations, in four of which the fluid was allowed free exit, in the other two the aspirator having been used at intervals, and the incision made only after the tumor had been considerably reduced. Such good fortune, however, does by no means always follow the treatment of these cases. Death appears to be the result of a septic metro-peritonitis, induced probably by the decomposition of the fluid. To prevent this, I always have the cavity frequently injected with clove-water. After recovery from the operation, it may be necessary for the patient to wear some apparatus to keep the passage open, but I have not found this necessary when the opening has been made into the rectum.

Besides these cases of congenital atresia, we meet occasionally with an acquired occlusion, the result generally of sloughing after labor. Such cases vary very greatly according to the damage done, but the principles governing their treatment do not differ from those required by the congenital cases further than that it must be very rarely the case that it will be necessary to make an opening into the uterus from the rectum. Much care must also be exercised in order to be sure that the enlarging uterus is not occupied by a pregnancy instead of retained menstrual fluid; and until the time has arrived when fœtal sounds ought to be heard, it is not easy to point out how the differential diagnosis may be made.

Young women about to marry, or who may have been married for some time, occasionally apply to us for some malformation of the genitals, which is discovered to be absence of the vagina without any of the symptoms of retained menstrual fluid. In these cases, the deficiency is accompanied by a deficiency, or, it may be, a total want, in the development of the internal organs. I have seen one dissecting-room specimen, and, curiously enough, it was in the body of a prostitute, where there was a canal about two-thirds of an inch long, but capable of extension inwards to about three inches, by an indrawing of the neighboring skin, but in which there was not a trace of uterus or ovaries. In hospital practice, two cases have come under my care, of young married women in whom the same conditions of the external organs were observed, and in whom, as far as a most careful examination under anæsthetics could determine, an equal deficiency of the internal organs existed. With one of those striking coincidences which are met with so often in surgical practice, these two young women presented themselves the same day, were examined at the same visit, took both the same satisfied view of their cases, that it was a relief to know they would have no children. They have since remained firm friends, for I often pass them walking together in the streets. Both declared that they suffered no kind of inconvenience from their defect, and that their husbands seemed perfectly satisfied.

I have met with several cases where the vagina was abnormally short, and where the cervix seemed to be just within the vulva. These cases do not seem to present any difficulties, either in their marital relations or in child-bearing. They do seem apt, however, to suffer from protrusions, and when this is the case there is usually much difficulty in fitting them with efficient supports.

Cases of congenital narrowing of the vagina to such an extent as to interfere with marital intercourse are not common, but they are sufficiently so for nearly every writer on these subjects to be able to detail one. I have met with one case of a woman who had been married nearly twenty years, and in whom the vagina was only sufficiently wide to admit a number-nine catheter. She menstruated regularly, and a normally large

uterus could be felt in the rectum. Intercourse took place only at long intervals, and for three or four days after it she was always quite unable to hold her water. The urethra was wide and flabby, and I have no doubt, from the appearances of the parts, that the urethra was penetrated by the penis in coition. In such cases, slow and gradual dilatation of the vagina, by means of glass or ebonite pessaries, might after prolonged use be productive of good.

A few cases are on record of double vagina, but of this malformation I have seen no instance. It must be, of course, an extension downwards of the septum of a double uterus, and therefore an arrest of development, or reversion to a type of organ seen in earlier animals. The proper proceeding in such a case would be to divide the septum as high up as the lips of the os uteri.

Urethra.

The urethra is always more or less involved in any acute vaginal inflammation, and in gonorrhœa it is the urethritis which causes most distress. To relieve this, there is no application so good as a morphia pessary. After the acute stage of the gonorrhœa has passed off, a chronic urethritis is often left, which becomes very distressing to the patient; but it is very easily cured by the application of equal parts of carbolic acid and glycerine on a probe armed with cotton wool. The various forms of dilatation of the urethra, and of its other diseases, have already been described in speaking of the meatus urinarius and of vaginal prolapses.

Only one other condition need be referred to here; and though the causes which produce it are not always resident in the urethra, yet its most convenient position is in this chapter. I refer to enuresis, or incontinence of urine. Cases of this affection fall into two categories, those in which there is constant dribbling of the urine, and those in which it is retained for a time, but discharged at intervals involuntarily. In the first variety, the condition will almost always be found to depend upon some central disease of the nervous system, or upon some previous injury to the urethra, or to be the mere expression of an over-distended bladder. In cases where there is central disease, the symptom falls under the notice of the gynæcologist only when it is desired that some mechanical contrivance should be made use of for the purpose of mitigating the inconvenience. I have strong objections to the use of any kind of apparatus for compressing the urethra, and always advise the use of the ordinary pouch urinal, unless the patient be bed-ridden, when Mr. Napier's catheters will be found extremely useful and quite free from risk. When the incontinence is due to mechanical injury, of course excluding fistulæ, the source of that injury will generally be found to have been the introduction of some foreign body into the urethra. I know of an instance where permanent incontinence resulted from the presence of the handle of a parasol in the urethra for some months, and I have already referred to a case where it was caused temporarily by the use of the urethra as a vagina. I have seen cases of permanent incontinence resulting from the dilatation of the urethra for the purpose of examining or removing foreign substances from the bladder. The custom of dilating the urethra for these purposes, introduced chiefly by Simon, is by no means free from the risk spoken of, however carefully it may be done. I have seen three instances of this result, one of which unfortunately occurred in my own practice. I am by no means sure that an aperture made in the neck of the bladder

and closed immediately is not a much better and safer practice, for it will always be possible to secure its closure. How to cure incontinence after dilatation of the urethra I do not know, every effort having failed in my hands. One expedient which I have not yet tried has lately been suggested to me by Mr. Spencer Wells, that of applying a cautery to the site of the sphincter.

In some few cases, dribbling is the result of over-distention of the bladder, just as it often is in men. An instance of this came under my care lately of this kind, the patient being a young lady of twenty-two years of age. A sample of urine, which had been brought to me by the patient, having a specific gravity of only 1005, I immediately suspected that she was malingering, and that she had diluted her urine, for she had no complaint to make save the distress caused by the dribbling. Placing her on the couch in my consulting-room, I saw the urine issuing from the meatus, and in order to collect some I passed a catheter into the bladder. Much to my surprise, I drew off about thirty ounces of limpid urine, having exactly the same character as the specimen she brought. She was instructed how to pass the catheter, and to use it every four or five hours, and in this way she maintains a tolerably comfortable existence.

Occasional incontinence of urine is most frequently met with in children before puberty, and is, in the vast majority of instances, merely a bad habit. They prefer to sleep rather than rise to micturate. They should never be punished for it, otherwise than by some moral influence, and it is always best corrected by careful attention to their early rising. In many instances it is, however, a physical infirmity, often accompanied by defective intellect. In these cases it may be retained beyond puberty, and prove incurable throughout life. Pregnant women, and women who have borne a large number of children, are subject to occasional incontinence; and I have often found them completely relieved by the use of an ebonite vaginal ball, such as I have already described.

Bladder.

The form of cystitis which is most common in women is that already described as associated with cystic vaginocele. I have seen one or two cases of chronic inflammation of the bladder which probably originated in an attack of gonorrhœa; but acute gonorrhœal cystitis, such as is seen in men and has in them such disastrous results, is unknown, I believe, amongst women. In cases of fading gonorrhœa, it is very common to find that pressure on the trigone gives a good deal of pain, and that the urine is alkaline and purulent. Injection of the bladder in these cases with weak solutions of carbolic acid or neutral acetate of lead will very rapidly effect a cure.

Chronic catarrh of the bladder is very often associated, in middle-aged women, with a gouty diathesis, and requires the liberal administration of alkalies, the use of injections into the bladder, and of soluble vaginal pessaries containing extract of belladonna.

A few rare cases have been described by Mr. Spencer Wells and others, of exfoliation of the mucous membrane of the bladder, and its extrusion through the urethra, after acute cystitis where a gangrenous process had been set up. The exfoliation of shreds of mucous membrane from the bladder is not uncommon; but that the whole coat should separate, the patient recovering as in the case related by Mr. Wells in Vol. III. of the "Transactions of the Obstetrical Society," is very wonderful.

The bladder is subject to two forms of ulceration of a non-malignant character, the first of which is by far the more common. It consists in the destruction of the mucous membrane in patches which vary greatly in size and shape, but which are usually situated at the base of the bladder. It is always associated with chronic cystitis, and is probably only its result. The symptoms are chiefly those of chronic cystitis, the urine being ropy, purulent, albuminous, and ammoniacal, the bladder very tender on pressure, and incapable of enduring distention. For the relief of the pain, the use of pessaries containing morphia or extract of belladonna will be found very useful, but a cure can be effected only by the introduction of remedies into the bladder. By far the best of these are carbolic acid and neutral acetate of lead. The former should be used in the form of injections of a two per cent. solution night and morning, until the urine has lost its ammoniacal character, and then the acetate of lead should be perseveringly employed. Sometimes more potent astringents are required, as nitrate of silver; but these should be used very cautiously. In many cases, the cystitis and ulceration depend upon mischief higher up, as pyelitis, and then they fall more properly under the care of the physician.

The other form of ulcer is very rare, and may be described best under the term of the chronic perforating ulcer. In anatomical characters as well as in semeiology, it closely resembles the perforating ulcer of the stomach; and Rokitansky tells us that, as in the latter organ so in the bladder, one of the methods of its fatal issue is by complete perforation, causing general peritonitis. It seems to occur most frequently at the neck of the bladder, and gives rise to agonizing pain at this part, which is seldom absent save when the patient is under the influence of some narcotic. During micturition the pain is intensified; but a few minutes of comparative ease are usually obtained after the bladder is emptied, and until the urine again begins to distend it. The symptoms at once remove the possibility of mistaking the disease for stone, and the comparative absence of abnormal products in the urine, except blood, make it easy to distinguish it from the other form of ulceration.

The only cure for this disease is one devised by the late Sir James Simpson, and first described by myself, as having been witnessed in his practice, in the *Lancet* for November, 1870. It is to establish a vesico-vaginal fistula, and by keeping it open for some weeks to give the bladder perfect rest.

The same object has been accomplished in another way in the case of a lady from Derbyshire, who came to me last year, suffering from spanæmia, associated with intense albuminuria, and from bladder symptoms. She had been condemned as the victim of Bright's disease, but the bladder symptoms induced me to dilate the urethra and search for a perforating ulcer. This I found at the upper and back part of the bladder. The dilatation of the urethra resulted in dribbling, and the rest thus obtained for the bladder is enabling the ulcer slowly to heal. The blood has entirely disappeared from the urine, and pus only is found; and I hope in time that a perfect cure will be accomplished. Dr. Sawyer saw the case with me, and at first we both feared that the ulcer was cancerous.

Stone in the bladder is much less common in women than in men for obvious anatomical reasons, and the symptoms it gives rise to in women are rarely so severe as those suffered by the other sex. Into the nature and characters of the various kinds of calculi met with in women, it is hardly my province here to enter. According to my own experience, the smooth uric acid calculus is by far the most common. The diagnosis of

the disease is very easy, for unless the stone be very small, or the bladder walls very thick, it may always be felt from the vagina. The symptom which most conclusively points to the presence of a stone in the bladder is the pain and straining after the viscus has been emptied, and if this is persistent, the bladder should be carefully explored by one of Napier's lead sounds. For the removal of the stone the urethra may be dilated, occasionally a risky proceeding; and it will always be better to break the stone up by the lithotrite if it be more than fifteen millimetres in diameter. Lithotomy should be very rarely performed in women; and if it is done, the wound should be accurately closed immediately after the operation. In one case, where I removed a small oxalate calculus from a patient by lithotomy because it was too hard to crush, I kept the aperture in the bladder open in order to cure a terrible state of chronic cystitis produced by the calculus. This I completely succeeded in doing, and then I closed the wound, and the patient is now perfectly well.

Polypus of the bladder is a very rare disease, and only one case has come under my notice. It occurred in a young woman, who was greatly blanched by a loss of blood from the bladder which had been going on for some years. I felt a thickening in the anterior wall of the vagina; and having dilated the urethra, I discovered a small pediculated tumor just within the neck of the bladder. I removed it by evulsion with a pair of forceps, and found it to be a myomatous polypus, similar exactly to those met with so often in the uterus. She had no more hæmaturia, and rapidly recovered.

Cancer of the bladder is generally secondary, extending from the uterus, and in that case it is generally ulcerating epithelioma. This form, however, occasionally arises in the bladder primarily, as I have lately seen in an old lady nearly seventy years of age. Villous cancer is a much rarer form of epithelioma, but it occurs more frequently in the bladder than in the intestines, its only other seat. I have never seen a case of it, and therefore think it well to give the following extract from an admirable description of the disease as seen in the bladder of a male, by my friend Mr. Joseph Bell of Edinburgh, and published by him in the Edinburgh Medical Journal for 1864:—"About seven-eighths of the mucous surface were coated with a soft villous growth like the pile of very loose velvet, the processes growing directly from the mucous membrane itself, and connected by pedicles. The villi were in some instances branched or had club-shaped processes, and they were occupied by small, transparent and closely-packed cells, which also infiltrated the adjacent mucous membrane." This disease stands to the other form of epithelioma of the bladder in exactly the same relation as the cauliflower growth of the cervix does to the excavating form of cancer.

Cases are on record where the bladder has been congenitally absent, the ureters opening directly into the urethra or into the rectum; but the more common condition is where the cavity not having been closed in front, no bladder is really formed, and there is only an extroversion of the posterior parietes and trigone, with the ureters, like two papillæ, on the red fungous-looking mass. This deformity is, in females, less seldom accompanied by other malformations than it is in males. In the latter, it necessarily involves the absence of procreative power; but not so in women, as some have seen mothers who were thus deformed. The ingenuity of some modern surgeons, especially Professor John Wood, of King's College, London, and the late Gustav Simon, of Heidelberg, has enabled us to mitigate the inconvenience which this malformation gives

rise to. The plastic operations devised for the purpose will be found described in the writings of these two surgeons, but they are hardly within the province of this work, and I have had no personal experience of them.

IV.—UTERUS.

Os Externum.—Any acute inflammatory affection of the vagina may, and too frequently does, extend to the uterus; and long after catarrhal or gonorrhœal vaginitis has ceased, we may find remains of it at the os uteri. When seen still in the acute stage, the lips are swollen, red and vascular, bleeding readily on touch, and the inner mucous surface is everted, and of a darker hue than the outer. The lips may also be dotted with pustules, which are the mucous crypts in a state of suppuration. This state of matters, if neglected, will last a long time, and the profuse purulent discharge which arises from it is a fruitful source of gonorrhœa in men. It is also a certain cause of sterility in the sufferers. I have repeatedly seen young women, who have been sterile for three or four years after marriage, become pregnant immediately after such a condition was cured. Inflammation of this kind is usually confined to the os and cervix; for even in the most acute gonorrhœa the body of the uterus seems to have great powers of resistance, and, save from septic or traumatic causes, acute general metritis is very rare. If seen in the primary acute stage, the patient must be kept perfectly quiet in bed, and injections should on no account be used. Pessaries containing acetate of lead and opium are by far the safest local applications, for by them no risk is run of driving the infecting discharge into the cavity of the uterus. They have, besides, the advantage of securing a continuous application of the remedy, which injections do not. In the sub-acute stage, I have found no remedy so good as a saturated solution of acetate of lead in glycerine, accurately applied on a plug of cotton wool, and nothing is so unsuitable as that favorite remedy, solid nitrate of silver. Armed with the caustic stick, the inexperienced practitioner is apt to think he can cope with all uterine maladies; and very numerous are the cases in which I have seen irretrievable mischief done by this potent remedy. I have seen a very simple chronic inflammation transformed into a serious acute traumatic form by the injudicious use of nitrate of silver; and over and over again I have had to re-open the uterine canal, when it had been occluded by repeated applications. It is constantly forgotten that solid nitrate of silver is an escharotic, and that every time it is applied a process of sloughing, followed by cicatricial contraction, is induced.

There is a form of chronic granular inflammation of the inner mucous surface of the os which is one of the most common diseases from which women suffer, and which usually goes by the name of "ulceration of the womb," though there is no ulceration at all in nine hundred and ninety-nine cases out of a thousand. The disease arises in very many different ways, some of which are tangible enough, but in the majority of cases no explanation of its occurrence can be obtained. It is very often a sequela of the first labor, or indeed of any labor or miscarriage, but it is also very common in nulliparous and in virgin women. It is characterized by obscure pains in the groin and back, somewhat profuse menstruation, fol-

lowed by a profuse thin whitish or yellow discharge, which diminishes in quantity to a marked extent, or even may wholly disappear, before the next period. If the os be inspected, its vaginal mucous surface will be found normal; but just at the marginal line the inner mucous surface will be found everted, raised above the surface, of a bright pink color, and bathed in a purulent discharge. If this discharge be seen to well out of the cervix, then a more serious state of matters exists. This chronic granular inflammation is almost uniformly set down by the inexperienced eye as ulceration, and is far too often subjected to the heroic treatment which is traditionally associated with that word. It needs no such violent treatment. A simple astringent lotion of sulphate of zinc or of alum will, in the majority of cases, speedily cure it. If it does not yield to that, it should be, in addition, touched once a fortnight with carbolic acid, or have the glycerine of lead applied twice a week. None of these remedies will do any harm, whilst the repeated application of an escharotic always does, especially if the mischief is not quite confined to the os.

Follicular suppuration is indicated by small punctate patches on the everted lips of the os, of a yellow color, resembling small pustules. This disease seems to be an extension of the chronic granular inflammation to the suppurative stage. It is very obstinate and very apt to recur, so that considerable perseverance is often wanted to effect a cure. By far the best application is the glycerine of lead, applied twice a week on a cotton-wool plug.

The os uteri is occasionally the seat of a primary syphilitic sore, and it is not always easy to detect it. Usually, however, the excavation is so deep, its purplish hue so decided, and the induration of its edges so well marked, that no doubt can be entertained as to its character. Exceptionally, the nature of the ulcer is not displayed till the onset of the constitutional symptoms. When discovered, there can be no doubt as to the propriety of destroying the ulcer, and of at once placing the patient on a course of iodide of potassium or of mercury.

There is besides a well-marked form of syphilitic ulceration of the os uteri, accompanied by interstitial induration, which belongs to the secondary, or perhaps even tertiary stages of this disease. It is not common; and in all the instances I have seen, it was at first mistaken, either by myself or others, for the early stage of malignant disease. It differs from cancer chiefly in the comparative absence of pain, the purulent character of the discharge, and the clear history of syphilis. In one case now under my care, it had advanced so far that the complete diagnosis was possible only after the improvement obtained by mercury. In this disease, the process seems identical with a similar condition met with in the tongue. Both organs are liable to epithelioma and to gummatous disease; and in the early stage of any doubtful case, even where no history of syphilis can be obtained, a prolonged mercurial course should be tried before any absolute opinion as to the malignancy of the disease is given. Early in practice I received a memorable lesson on this subject, which has since kept constantly before me the possibility of condemning a syphilitic patient to death under the erroneous belief that her disease was cancer. The case was one, to all appearance, of epithelioma having destroyed the posterior lip of the uterus, and eaten a hole through the septum into the bowel. A more experienced practitioner recognized the possibility of the disease being syphilitic, and cured the patient completely.

The rarest of all the diseases which affect the uterus is a form of ulceration which is undoubtedly tubercular. I have seen only three cases,

and all three only once. The last instance which came under my notice was in a woman sent to me by my friend Mr. Harries, of Shrewsbury, under whose care she had been for two years, and who had completely exhausted the round of therapeutics in his efforts to benefit her. The uterus was large and hard, but perfectly movable. The cervix was widely open, ragged, and had a grayish-yellow color all over, and gave exit to a profuse unhealthy yellow discharge. The appearance of the cervix was not altered after being cleaned, and it did not bleed on being touched. The disease had seemed to be stationary for some months, but the patient was getting much thinner, and I could discover no trace of tubercular disease elsewhere. I think that this disease might perhaps yield to the heroic application of caustic, but I have as yet had no opportunity of trying it. The clear indications for treatment are those of general tubercular disease; but the general prognosis, so far as I can discover from the few authors who mention this affection, is not favorable.

To avoid needless repetition, I shall defer the discussion of epithelioma till I treat of diseases of the cervix.

I have met with one case of congenital absence of the os uteri, that is, where atresia of the genital canal existed by the agglutination of the lips of the uterus. The defect was not discovered till the girl suffered from the symptoms of hæmatokolpos, and it was completely relieved by free crucial incision. The patient was perfectly virginal, so that there was every reason to believe the closure to have been the result of some error in development.

Stricture of the external os, generally associated with a peculiar conical formation of the free portion of the cervix, is an extremely common malformation, and one of the most frequent hinderances to conception which we have to treat. The cervix is very frequently elongated, and at its extremity the aperture may be so small as to be found with difficulty. This stricture causes severe mechanical dysmenorrhœa, and is very often associated with chronic endometritis, due apparently to the hinderance to the exit of the uterine discharges. The proper treatment is to slit the cervix on each side up to the vaginal insertion by scissors, and to insert a cleft stem pessary to prevent the re-union of the cut surfaces. The endometritis must, if it does not get well after the cure of the stricture, be treated as will be afterwards described. Of all the mechanical causes of sterility, this is the most satisfactory to treat, because in a large number of cases the patients become pregnant soon after the operation.

Most of the cases of closure by cicatricial contraction which I have seen, have been due to the heroic use of caustics, a fashion which was brought in by the last generation of gynæcologists, which still rages amongst practitioners of limited experience, and which produces, as I have already said, a great deal of mischief. Nobody would dream of subjecting any other mucous orifice to such violent treatment as many are in the habit of daily applying to the os uteri. Similar occlusion is occasionally due to sloughing after labor. It may generally be cured by an incision, followed by the prolonged use of an ebonite stem pessary. I have met with a case lately in which the patient complained of the greatest distress during intercourse if intromission was complete. On the most careful examination of the os, both by myself and others, no abnormal condition could be discovered, but the most acute pain was caused by any pressure on the lips of the uterus. We could only call the disease hyperæsthesia, and it has been completely cured by a liberal application of the actual cautery to the lips, avoiding the cervical canal.

Cervix.—Acute inflammation extending to the cervix is almost always either of gonorrhœal or septic origin, or it may occasionally occur from a traumatic cause, such as a surgical operation on the organ. Acute gonorrhœal cervicitis, or endo-cervicitis, may be suspected when in addition to the characteristic appearances of gonorrhœa already described, the patient complains of supra pubic pain, and if, on examination by the speculum, a copious discharge seems to issue from the os. Such a condition is full of anxiety, for the disease may spread up the uterus and along the tubes to the ovaries. The patient must be kept rigidly in bed, and be treated by soluble pessaries of acetate of lead and opium, and general antiphlogistic remedies. On no consideration whatever should injections be employed in such a case, on account of the accidents which are described at greater length in the chapter on inflammation of the ovaries.

Acute septic cervicitis, associated of course with general metritis, will be spoken of in another chapter. Traumatic cervicitis often occurs after operations on the cervix, such as division of strictures, amputation of a part of a hypertrophied organ, but more especially after the use of sponge and sea-tangle tents. It must always be borne in mind that the use of these appliances is never free from risk; and when it is necessitated by the circumstances of any case, great watchfulness is required to secure that harm is not done. We are greatly in want of a material for dilating the cervix which shall be safer than either. Sea-tangle exercises such an irresistible force that everything must dilate or be torn, and with sponge there is always the risk of septic poisoning. I have reduced this to a minimum by the use of sponge tents impregnated with oil of cloves, but even with these there seems to be some risk. Complete immunity from danger may, however, be obtained by placing the tent within an elastic capsule. The pain caused by the dilatation of sponge is not usually great, whilst that of sea-tangle sometimes causes an agony wholly insupportable.

Chronic endo-cervicitis is often a sequela of the acute process, but it is far more commonly met with as a result of subinvolution of the whole organ, especially of the cervix, with chronic induration of the tissue and a marked hypertrophy of the mucous membrane. Under these latter conditions, the actual mucous catarrh is, in the great majority of the cases, limited to the cervix and does not extend into the uterus, even though the whole organ should be in a condition of subinvolution. Why this should be so I do not know; but the common experience that a few applications of some astringent to the cavity of the cervical canal will cure most of the cases of "uterine catarrh," has led to a very frequent overlooking of the existence of chronic endometritis. In the chronic endocervicitis of subinvolution, the lips are thick and everted, and the cervical canal is widely open. If a section of the cervix in such a condition be examined, it will be found that the mucous membrane has retained in great part the characters it presents in the pregnant condition. It is about three times as thick as it is in the normal non-pregnant condition, its processes retain their dendritic form, and the crypts their exaggerated depth. In such a condition the use of an escharotic is indicated, and in this disease one or two applications of nitrate of silver are always beneficial, but its use must not be pushed too far. For the second stage of the treatment, carbolic acid is best, and that should be followed by the glycerine of lead. The general treatment of chronic metritis with subinvolution will be considered by and by.

In pregnancy, the mucous membrane of the cervix takes on the characters already described, and thereby closes the uterine cavity. During

this process it is not unusual to find the patients complain of the profuse leucorrhœa which accompanies it. Great care must be taken, therefore, before any application be made to the inside of the cervix on account of endo-cervicitis, to be perfectly sure that pregnancy is not the cause of it. In such a case, only the use of vaginal injections of acetate of lead or sulphate of zinc is allowable. I have known more than one case where the rash use of the caustic holder has resulted in an unexpected miscarriage. After labor, especially after a first labor, it is not unusual to find women suffering from endo-cervicitis of a subacute or almost acute kind. During the last few weeks of pregnancy, and for some time after labor, married life has perforce been suspended, and the husband has lost possibly what Ricord has called *acclimatisation*. The discharge from this endo-cervicitis may therefore, at the first congress, have all the effect upon him of a gonorrhœa, and it has repeatedly fallen to my lot to relieve both husbands and wives of a painful misapprehension of want of conjugal fidelity, based upon this fact. A husband may suspect his wife's chastity under the circumstances, though that is infinitely more rare than the converse; for, as a rule, when a woman makes the unpleasant discovery that "there is something wrong" with her husband, she immediately credits some other woman with the mischief; then, in addition, she blames her husband for her own condition. A little detailed explanation will always be enough for reasonable women, and the others are best left alone.

Hypertrophic elongation of the cervix may be either congenital or acquired, in the latter case being always the result of pregnancy, associated with general subinvolution of the organ, and never, in my experience at least, requiring operative interference. If the acquired form be associated with prolapse or protrusion of the uterus, the whole condition may require a surgical remedy. The peculiar elongation of the cervix which is so often met with in sterile women is unquestionably of congenital origin. though the malformation becomes considerably exaggerated after puberty, In several instances I have seen it so marked that the os externum was visible outside the vulva in girls under the age of puberty. Usually, however, even when protrusion does occur, it is not till the patients are at the nubile age. The great majority of the cases of this malformation come under our notice by reason of the sterility of which it is the cause. The vagina is always short, and from the flexure a long conical cervix projects, very often appearing outside the vulva, with the mucous surface transformed into skin. Above the flexure of the vagina, the cervix may also be felt elongated, and the length of the whole organ is exaggerated. The os is always small, and the cervical canal narrowed. The condition is a very troublesome one, and is a source of great distress in a married woman. The best remedy is amputation of the vaginal portion by the écraseur, and subsequent dilatation of the rest of the canal. In this way I have repeatedly enabled the patients to become pregnant, the pregnancy always resulting in a cure of the imperfect condition of the vagina. I have now under my care, in association with my friend Mr. H. Langley Browne, of West Bromwich, a very pronounced case of this malformation, where pregnancy has followed dilatation without amputation, and the condition now is very remarkable. The cervix feels like a protruded uterus, with which the sudden swelling of the pregnant fundus appears to have no connection until very careful examination is made. In fact, unless this patient had been under my care previous to her becoming pregnant, the diagnosis would have been very difficult.

In one case of this hypertrophic elongation of the cervix, I had to amputate nearly two inches of the organ in order to reach a polypus. The elongated cervix would not dilate by sponge sufficiently to allow me to manipulate. The patient recovered from the double operation without a bad symptom.

In cases of amenorrhœa, or dysmenorrhœa, we constantly find that the uterus, and also its associated organs, have been insufficiently developed, and have retained more or less of their infantile characters. This condition is readily to be diagnosed by the state of the cervix. It is small and nipple-like, the canal being correspondingly contracted, and there is almost always a marked degree of anteflexion. Very many instances of the "infantile uterus" will be met with in young women, otherwise perfectly formed, and appearing in the most robust health. In these cases, iron alone is of no manner of use. What is wanted is a mechanical stimulus to the uterus, and that is best afforded by Simpson's galvanic pessary. The general treatment of these cases I have discussed in the chapter on the diseases of the ovaries, for they are the organs chiefly affected. Accompanying this arrest of development of the sexual organs, we have many diseases of the nervous system directly due to it, more especially epilepsy. In hospital practice I have seen a large number of cases of epilepsy due to menstrual suppression or insufficiency, and which have completely recovered as soon as the function has been properly established.

Stricture of the cervical canal, save in well-marked cases of arrest of development, or from traumatic causes, is not at all frequent, though stricture of either of its orifices is very common, especially that of the external os, already described. Stricture of the canal is best treated by its gradual dilatation by means of intra-uterine stems, especially the galvanic stem. Stricture of the internal os can be cured most readily by bilateral incision, followed by the prolonged use of an ebonite stem. Mere dilatation of the internal os in cases of stricture is not very successful, because there certainly seems to be more of a spasmodic than of an organic character in the strictures at this point. This seems to me to account for the otherwise inexplicable cases which almost every gynæcologist seems to have met with, and which I have repeatedly experienced, where though a large-sized sound may pass readily through the internal os, yet the dysmenorrhœa and the sterility are cured by the performance of Simpson's operation.

The symptoms of this form of stricture of course closely resemble those of other kinds of mechanical dysmenorrhœa, but the character and date of the pain will often be found of great help in the diagnosis. It is very often difficult to get a nulliparous woman to understand what expulsive pains are, but some patients give such graphic descriptions of their sufferings as greatly to assist in the diagnosis. Two rules may be laid down about the pain, which hold good in most cases, though exceptionally they fail us. The first is, that if the pain precedes the appearance of the menstrual flow, the dysmenorrhœa is ovarian; whilst if it follows the discharge, is of a spasmodic character, and is chiefly referred to the back, it is due to some mechanical obstruction in the uterus. Stricture of the internal os is sometimes met with after a first labor, causing subsequent sterility, and is then probably of traumatic origin. I have never seen any cases of atresia of the cervical canal or internal os which have not been due to the heroic use of caustics. The treatment of such cases would differ in no way from that of atresia of the vagina or external os, such as has been already described.

Tumors of the Cervix.—I have once or twice met with small cysts in the cervix, never larger than a good-sized pea, and filled with glairy fluid. Their outside wall is always very thin, and they probably always disappear by spontaneous rupture. I had the opportunity of examining one in situ, in a virgin uterus, and found that it consisted of the saccular dilatation of a mucus crypt, and was filled with inspissated mucus. They are never of any clinical importance. Small mucous polypi are not uncommon in the cervix. They are generally of a bright red color and very vascular, never reach a large size, and, as they give rise to no symptoms, their discovery is usually quite accidental. They are very soft, break up very easily, and do not seem apt to return. They consist, so far as I have been able to make out, of a fragment of the villous mucous surface which has undergone hypertrophy with an increase of vascularity. They are quite different from the myomatous polypi to be afterwards described, but it must be borne in mind that these also may be found occasionally to be of cervical origin.

I have already drawn attention to syphilitic disease of the uterus, so that very little more need be said of it. I have in my possession a post-mortem specimen of it, which shows that the change consists essentially in an affection of the epithelium, the mucus crypts being dilated and filled completely by large round cells instead of their ordinary columnar epithelium, the whole mucous layer being thickened, and the length of the crypts increased. The same changes are to be observed in syphilitic disease of the tongue. Its clinical appearance is, as I have already said, very like that of cancer, and care should be taken to avoid mistakes.

Cancer.—The whole of this important subject may here be discussed with convenience, because in an overwhelming majority of cases it is the os and cervix which are first attacked. The disease is at once the most painful of all the manifold afflictions from which humanity suffers, and the most terrible, because nothing can be done for cure, and even our palliative measures are insufficient. Like all other special practitioners, I have had a painfully large experience of this disease, and I can hardly help gathering the impression that it is becoming more common than it used to be. To an investigation of the pathology of uterine cancer I have devoted a large amount of personal work, and have arrived at a conclusion similar to that of Waldeyer, that every case of uterine cancer is of epithelial origin. In fact, it may always be ranged under two classes : the first, in which the epithelial proliferation extends outwards and becomes papillary ; and the second, by far the more common, in which the crypts are first involved, the cellular changes spreading inwards from them.

The first of these varieties of cancer is very rare, and is generally known as "cauliflower excrescence of the cervix," a name which has the merit of being graphically descriptive, but erroneous in that it gives the impression that the disease never affects the fundus. I do not suppose that any one practitioner has had a very extensive experience of this disease, at least I do not gather the fact from the statement of any writer. In my experience it has been very rare; for out of some hundreds of cases of uterine cancer, I have met with but four instances, three of them only being in my own practice. In one of these, the tumor grew, not from the cervix, but from the fundus, and I removed it again and again during its course of nearly three years. The patient died purely of exhaustion, and after death the uterus was not fixed, neither were any other organs in-

volved. The disease seems to me to be wholly analogous to villous cancer, as met with in the bladder and intestines, and should have that name. It arises in the villi of the uterine mucous surface, and most frequently therefore in the cervix, and it does not usually show any tendency to invade the neighboring mucous surface. Indeed, I have seen a mass of it almost as large as a child's head scooped out of the vagina; and after the removal was complete, we found the mucous surface of the vagina perfectly healthy up to the commencement of the villous surface of the cervix. This disease is not always malignant, for Simpson describes a case in which, eighteen years after removal, it had not returned. I have now under my care a girl, aged twenty, in whom a soft dendritic growth forms in and extrudes from the cervix, and returns after a time. It causes her no great inconvenience; yet in appearance, and even in its elements, it is somewhat like the cauliflower excrescence. It may become malignant by and by; but really all attempts to define malignancy have as yet failed, and we have no other means of classifying a large number of growths than that rendered by the tersely practical pathology of Syme, who used to teach us that he regarded everything as malignant which he could not cure. The great majority of the cases of this villous cancer of the uterus are malignant; that is, they will return after removal, and will not be cured.

In October, 1878, I removed from a patient at the Women's Hospital, a polypus as large as a closed fist, lying free in the vagina, and attached by a well-marked pedicle just within the cervix. The patient had been suffering from all the symptoms of polypus for nearly five years. The naked-eye appearances of the tumor were exactly those of a myoma, but on cutting into it its consistency and structure struck me as being different. On microscopic examination I found it to be composed exclusively of epithelial cells, and these were found to be here and there arranged in nests, exactly as in epithelial cancer of the skin. Upon this ground I foretold the return of the disease, and within six months my prognosis war confirmed.

Any statements concerning the other variety of cancer of the uterus, that in which the epithelial proliferation originates in the crypts, and spreads from them in all directions, must be made still more unfavorable. For it there is no cure. I have removed it by a variety of operative proceedings in a large number of cases, and have never had a cure. Even in the remarkable case where the efficiency of the operation was secured by the sloughing out of the whole uterus after the removal of some cancer by Dr. Mundé, the disease returned in the scar.

The causes of this dreadful disease are involved in obscurity, and the only fact bearing on them which is in our possession is that heredity has a strongly predisposing tendency. Uterine cancer comes to the old and the young, for I have seen it begin at twenty-two and at seventy-five. It comes to the single and the married, to the sterile woman and to her who has borne many children, but it is most apt to appear in the years just preceding the climacteric change.

The vexed questions of the pathology of cancer generally, or of the disease as found in the uterus, cannot be discussed here without an unreasonable and useless extension of this work. Histologically, the characters are essentially those of immature and reckless cell proliferation, the presence of numerous nuclei, both in the cells and free, suggesting the idea that they have had no time to become full grown; and I have never failed to find evidence that the primary changes take place in the epithelium. I

do not believe, therefore, in primary scirrhous disease of the uterus, that is to say, a cancer of the uterus in which the epithelium was not the primary seat of the disease. That the uterus gets fixed in a hard mass, and itself undergoes changes which give it all the naked eye and microscopic characters of scirrhous cancer, is no doubt true; but after having watched a large number of cases from the beginning to the end, I have no hesitation in giving my adhesion to the view that they are all truly epithelial, and that the subsequent changes are secondary, just as they are in the tongue.* The course of the disease varies very greatly in different patients, without any apparent reason; and even in cases where the beginnings have been almost identical, the endings are terribly different. Thus I have now under my care two women, one of whom I have watched for nearly two years; and in her the deep ulcer, with raised and indurated edges, which she had when I first saw her, has scarcely increased. The other when first seen had an ulcer not so large, but very similar in character, yet in six weeks it has opened into the bladder and rectum, and in a few more weeks it will have killed the patient, who is only twenty-seven years of age. In some cases the disease seems to progress chiefly by destruction of tissue; in others, by growth and implication of surrounding organs. In the former category are to be found instances of the variety described by Clarke as the rodent ulcer, though neither clinically nor pathologically does this differ from the other forms. The only difference is in its course. Occasionally the ulcerative form attacks the fundus, and never appears outside the cervix at all. An interesting case of this kind was lately sent to me by Dr. Evans, of Sutton Coldfield, in which the first symptom to make the diagnosis certain was the passage of the urine through the cervix.

The symptoms of cancer are very various, and depend in great measure on the course the disease takes. Thus in the villous variety the chief symptom is the persistent occurrence of a watery and offensive discharge, with more or less profuse hæmorrhage at intervals, especially after coitus or any exertion. There may be very little pain, and the malignant cachexia may never make any appearance beyond that of spanæmia. Discharge of a watery and often blood-colored fluid, with occasional hæmorrhages, is an almost constant symptom in all the forms of uterine cancer, and sometimes the hæmorrhage is continuous, and extremely profuse. This discharge is generally very offensive, so that a keen nose may diagnose cancer before a question is asked. Women in the class of life from which hospital patients are drawn are so habituated to loss of blood, that it is no unusual thing for them to apply to us in the very last stage of the disease, without their having any idea that the cause of their loss of blood could be anything more serious than the change of life or the result of a miscarriage. Pain is generally a most distressing, persistent, and often an almost uncontrollable symptom, and to relieve it is almost all that is left to the attendant in the majority of cases. For this there is only one drug of the slightest use, according to my experience, and that of course is opium. Henbane, belladonna, and conium may all be dismissed. Chloral hydrate is of no use for relieving pain, short of sending the patient to sleep,—that is, it is a pure hypnotic and not a sedative.

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* The mere presence of scirrhous masses is no proof of that form being the primary one, for we find it secondary to epitheliomatous changes elsewhere.

The use of opium in cases of cancer requires a little care in order to get the greatest amount of benefit out of it. If the patient has been told of her condition, and made fully aware of her fate, a full explanation should be entered into concerning the use of the drug. But if for any reason it has been thought well to temporize, then the prescriptions must be made to correspond. I cannot help here, however, entering my protest against the too prevalent custom of withholding from patients affected by cancer a candid statement of their condition. Having made up my mind to a diagnosis, I never withhold it in such a case.

To use opium well for the relief of pain in cancer it should be directed, in the early stages of the disease, in full doses at bedtime, in the form of 30 to 50 drops of the ordinary tincture. The pain of cancer, especially when not far advanced, is always worst at night, and the patient's comfort and health are greatly aided by a good night's rest. They should be persuaded to restrict themselves as long as possible to the one dose at bedtime, and to refrain from taking any during the day. As soon as this is begun the efficacy of the drug rapidly diminishes, for they cannot take large doses in the day-time, and the small stimulant doses are mischievous in many ways. When the activity of the drug has been diminished so that doses of 120 to 160 drops are necessary to procure sleep, it will be often found useful to change the method of administration to the use of a suppository of cocoa butter and morphia (gr. $\frac{1}{2}$ to gr. 1). Towards the close of the case, the use of the hypodermic syringe must be introduced, but this should be delayed as long as possible, for the doses in this method of administration rapidly increase. Finally, it may be necessary to keep the patient protractedly under the influence of chloral, or even chloroform.

Anæsthetics may be entrusted to intelligent patients to be used by the apparatus of Dr. Crombie, which secures perfect immunity from over-administration; but of course it would be better that their use should be watched by a skilled practitioner. For the arrest of the hæmorrhage, injections of strong vinegar, or a solution of ten per cent. of sulphate of iron, or a pessary containing five grains of perchloride of iron, will generally be found sufficient. Plugging the vagina is a barbarous and unscientific method, and should never be employed. Occasionally, however, bleeding is so persistent that no ordinary means will stop it, and then it is necessary to use some surgical hæmostatic. For this, the red-hot iron affords the readiest, but the least satisfactory, weapon. The objection to its use is, that the hæmorrhage is almost sure to recur after the separation of the slough; and the application of the cautery even over a large surface may not prove effectual. A much better means of arresting the loss of blood I have found to consist in the removal of the diseased tissue, by means of Simon's scoop, until sound tissue is reached. Indeed, this I believe to be the only justification for interfering with advanced cancers of the uterus except of the villous kind. If we find a small suspicious ulcer on the cervix, having a very slow growth, we may scoop it out, because we may now and then get a case where the disease will not return; though of this happy result the chances are not great if the disease is cancerous. All the many forms of treatment of a fancy kind which have been urged by their various inventors as cures, have as yet proved illusory, and most of them may be relegated to the province of the charlatan.

Death from uterine cancer is usually horribly protracted, so much so that I have often wished that I could have granted the euthanasy the

patient ardently desired. Death usually results from the exhaustion caused by a combination of the discharge and hæmorrhage, and the functional disturbances due partly to the disease and partly to the hypnotics, but chiefly from a systemic poisoning induced by the cancer. To the shrunken, yellow, and death-like face which often characterizes the last stages of cancer, the name of malignant cachexia has been given; but its appearance is not constant, and is often imitated by mere spanæmia, so that no great reliance can be placed on it as an aid to diagnosis in cases of doubt.

Acute gonorrhœal metritis is very rare; for even if the disease spread through the tubes to the ovaries, the body of the uterus seems to be rarely affected beyond its lining membrane. Traumatic metritis sometimes follows operations, but it so rapidly merges into the same form as that which arises from septic causes, that it is impossible to discriminate the one from the other. Septic metritis is only too common and too fatal. It may occur after the most simple operation, after a miscarriage, or after labor; and it is fatal in by far the greater number of cases. I have known it to occur after the use of a tangle or a sponge tent, after simple incision of the os, and after the removal of polypi and other kindred operations. In fact, so prone are women, especially in the pregnant condition, to suffer from septic infection, that no precautions against infection can be too stringent. Thus I hold it to be absolutely inexcusable for practitioners who are engaged in dissecting-room or pathological investigations, to attend obstetric patients or to perform any kind of surgical operations; and I further think that surgeons engaged in general surgical practice, involving constant attendance on suppurating surfaces, should never undertake any operations upon the uterus. We do not know the nature of the contagion which is thus communicated, but we can no longer blind ourselves to the fact that the hands of the surgeon are sometimes its vehicle. In the acute septic metritis of child-bed, this source of infection has been proved beyond a doubt, so that the responsibility of the attendant is now enforced by law in cases where it is apparent.

Septic metritis is generally ushered in by a rigor, though this indication of mischief may be absent, and the first symptoms may be sickness, a quick pulse, and high temperature. Very soon the abdomen becomes distended; and if the uterus be then examined, it will be found soft and very tender, with an offensive discharge issuing from the cervix. The breath begins to take on the peculiar hay-like odor of pyæmia; vomiting becomes incessant, the ejected matter being at first tinged with bile, and then with half-digested blood; and in a few hours the patient dies. In a few cases the symptoms do not reach this last stage, and the patient, being carried on for a few days, slowly recovers. In the treatment of such cases I have completely exhausted every recommendation which I have met with, and am not in a position to say that I have seen the least benefit from any drug but opium. Liberally administered, either by the rectum or by the hypodermic syringe, it diminishes suffering and may tide the patient over the period beyond which, if she lives so long, recovery seems possible; for this disease seems to me to resemble tetanus in this respect, that if the patient can resist it up to and beyond a certain point, recovery will take place. Warm fomentations over the abdomen also give relief; but every other kind of interference I look upon as mere therapeutical experimentation, not to be encouraged. The day may come when we shall see some specific antiseptic which shall cut short the peculiar fermentative change which takes place in the tissues in this disease,

but at present it exists not in quinine, nor in the sulphites, nor in salicylic acid, nor in any other remedy within our reach. Acute metritis must be distinguished carefully from perimetritis and parametritis, in both of which the prognosis is very different, and so is, to a great extent, their treatment.

"Abscess of the uterus" has been so rarely described, and so many of the cases of it which have been recorded are open to other interpretations, that I had excluded the disease from my nosological table, and would have continued to do so had I not met with the following case three weeks ago, and been satisfied by it that an abscess of the true uterine wall does sometimes occur. The patient had borne four children, the last only five months old was still at the breast. After exposure to severe cold for some hours during a journey, she had a violent rigor, followed by severe supra-pubic pain. I saw her on the third day, and found a mass at the base of the bladder, very tender to touch and intimately associated with the uterus. The cervix was slightly open and very soft, and a thick, bloody, purulent discharge issued from it. I had therefore no hesitation in passing the sound, and found the uterine cavity of the normal length and directed backwards, so that the point of the sound could be felt in the rectum. The mass moved with the uterus freely, so that I came to the conclusion that I had to do either with a small fibroid about to slough, or with a true abscess of the anterior uterine wall. In either case it seemed to me advisable to have the cervix dilated; so I introduced a sponge tent and administered a grain of morphia by hypodermic injection. Next day, when I removed the tent, I found it soaked with bright healthy pus; the uterine mass was not half the size it had been; the uterine cavity was full of pus; and when I passed my finger into it, I could feel a soft spot, with an aperture in its centre, on the anterior uterine wall, just within the cervix. The patient recovered perfectly in little more than a week, and now there is no fixation of the uterus, nor any remains of the mass whatever to be felt, a fact which seems to me to be a positive proof that the abscess was not parametritic, as in such a case there is always some remnant for months afterwards.

Chronic metritis is the most common malady which comes under the notice of the gynæcologist, especially in hospital practice. It has been described under a variety of names, such as "areolar hyperplasia;" but I think common consent now makes all other names give place to the one adopted here.

Chronic inflammation of the uterus may be the result of acute metritis, though this is very rarely the case, for reasons I have already given; or it may be due to some acute inflammation which had its seat in neighboring tissue. Thus after the subsidence of perimetritis or parametritis, there is a condition of chronic metritis often left, which takes a long time to get well. But in the majority of the cases, one might almost say in ninety-nine out of every hundred, the chronic metritis is accompanied by and is directly due to subinvolution of the uterus after labor or after a miscarriage.

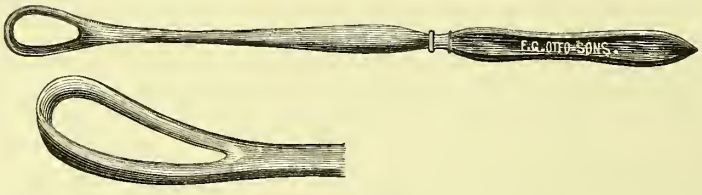
The process of the involution of the uterus after parturition need not be here alluded to further than to say that it is not completed, even by a perfectly healthy woman, in less than thirty or thirty-five days, and a great many accidents tend to delay it, or even to arrest it completely. Thus all inflammatory attacks in the pelvis occurring after labor, mental shocks, the suppression of the milk, retention of pieces of placenta, and most frequently of all, that unconquerable habit of the lower orders of

women, necessitated perhaps by their exigencies, of getting up too soon, interfere with it. There also seems to be a constitutional tendency to subinvolution in some women, to which we give the vague name of "laxity of fibre," and instances of this peculiarity are not confined to the lower classes by any means, nor does it appear only in women who look unhealthy. Amongst the working classes of our large towns there is a widely prevalent belief, for which I must say that I have discovered no good foundation, that prolonged suckling hinders the mother from becoming pregnant; and in this belief we have, I am persuaded, another cause of the enormous number of cases of subinvolution which come under our care. Medical advisers should lay it down as a law that, save under very especial circumstances, lactation should cease when the child is nine months old. Another frequent cause of the insufficient involution of the uterus is the neglect of an abortion or miscarriage, for women of nearly every class seem to regard such occurrences as events of the most trifling importance, whilst really they are generally more serious than labors.

The symptoms of subinvolution are shared by other conditions of the uterus, from which it is necessary carefully to discriminate it, for mistakes in this matter may have serious consequences. It may be accepted as the rule that a woman should not begin to menstruate until at least seven or eight months after delivery if she be suckling the child, or for two or three months if the child be not at the breast. If, therefore, a patient informs us that she has been regularly and profusely unwell ever since her confinement, or that she has had a continuous colored discharge with occasional floodings, we may at once conclude that she is suffering from subinvolution, or perhaps something worse. In such a case an examination should always be made, first with the finger, and then, if necessary, with the speculum and sound. If there is cancer of the cervix, the educated finger will be enough to detect its presence, and the subinvolution will be only a secondary matter. In the great majority of cases the subinvolution is simple and uncomplicated, and then the cervix will be found large and thick, with the os insufficiently closed, but not patent enough to admit the finger. There will also be a copious muco-purulent discharge, existing between the menstrual periods, and these are likely to be too frequent, too prolonged, and too profuse. If the uterus be measured by the sound its cavity will be found to exceed the normal length of six centimetres, and then the diagnosis is complete. But care must be taken to see that there is no persistent cause for the subinvolution, such as a piece of retained placenta. For the investigation of this point, the history is very important. Has the patient had a miscarriage within the last few months? It is wonderful to find how difficult it is to get some women to give such a history as will answer this simple question. If it is likely that there has been a miscarriage, the suspicion must be entertained that a piece of placenta is still in the uterus, and in the great majority of cases it will be found to be so. If the hæmorrhage has been severe and the patient is anæmic, the duty of the practitioner is clearly to search for and remove the retained fragment. If the cervix is open, so that the finger can almost be pushed in, the presence of a piece of placenta is pretty certain, and a few hours' dilatation with a sponge tent will make the certainty absolute. To remove the placenta, the finger is the best weapon, but sometimes the assistance of an instrument is required, and I have found none so good as a fenestrated scoop of steel, which I have had made for the purpose, with an edge so bevelled that it

will scrape a surface clean without any possibility of cutting it. The loosened pieces may be removed by forceps. It must never be forgotten that these patients are very much inclined to suffer from septic infection; and suitable precautions must therefore be taken by disinfectants, to prevent such accidents as far as possible. It must also be borne in mind that small fragments of placenta may be left attached to the uterus after a labor at the full time and of the most normal character, even when superintended by an accomplished accoucheur. No fault is to be attributed in such a case, unless the practitioner has been so careless as to overlook symptoms which evidently pointed to the fact that a piece had been retained, and has allowed the patient to suffer either from hæmorrhage or septicæmia. Pieces of placenta may be left by the most competent practitioners, but only the most incompetent will leave them till they endanger or destroy the lives of the patients.

If the cervix be so closed and the history so indistinct that the retention of a piece of placenta is doubtful, and more especially if the hæmorrhage be not so severe as to demand immediate interference, then another and very important aid to diagnosis should be tried before the uterus need be dilated. This consists in the treatment of the patient by rest, and the administration of ergot and salts of potash. If the hæmorrhage yield permanently to this, we may be sure it is a case of simple subinvolution; but if it does not, then the cavity of the uterus must be explored.



The action of good preparations of ergot upon the uterus, especially of Bonjean's ergotin, needs proof no more than does that of opium upon the nerve centres; but a word or two may be said of the salts of potash, and I wish to do so chiefly in vindication of the views of my friend Professor Binz, of Bonn. Every one knows that the bromide of potash is a specific cure for simple subinvolution, but it is not so well known that the benefit is derived from the potash, and not, as is generally supposed, from the bromine. Bromide of sodium has had, in my experience, no such markedly beneficial results as the bromide of potash, but the effects of the latter are quite equalled by those of chlorate of potash. I have no doubt that other salts of potash would be equally beneficial if they could be borne in equally large doses. But, with the exception of the citrate, all the other salts are either poisonous or have such effects as greatly interfere with the processes of digestion, and therefore they can neither be given in doses large enough, nor for a time sufficiently prolonged; whilst the citrate seems to pass so quickly out of the system as to exercise but little influence upon it. Combined with ergot, either the bromide or chlorate of potash, in doses of a gramme thrice daily, will be found to exercise an almost infallible influence on uterine hæmorrhage, unless there be some mechanical cause for it, such as a cancerous growth, a polypus or piece of placenta.

Whilst speaking of the treatment of uterine hæmorrhage, I may here say that no set of circumstances can justify plugging the vagina, except

the direst emergencies, when the practitioner is at a distance from aid and has not the proper apparatus by him. It is a barbarous, slovenly, unscientific proceeding, and is generally based upon incompetence and instigated by terror. If hæmorrhage be issuing from a closed os, it may be plugged with a sponge tent, in order that the source may be afterwards reached. But if the cause of the hæmorrhage be known and be irremovable, the treatment should be to inject the uterus with acetic acid, or even with some salt of iron, though the latter is a proceeding accompanied by terrible risks.

In the cases of chronic metritis due to subinvolution, the uterus, besides being enlarged, is hard and tender to the touch, and enlargement of the ovaries may generally be found associated with it. This disease is chiefly due to recurrent subinvolution; that is, the uterus does not get properly involved after the first labor, the woman becomes again pregnant, and the process being repeated year after year, she finally gets a uterus twice or three times the normal size, with a continuous and copious leucorrhœal discharge. Menstruation becomes so frequent that she is rarely clear for more than a week, and at every washing she will have twenty-five to thirty diapers to be cleansed, and in such cases intercourse nearly always increases or brings on the flow. Prolapse or even protrusion is also a frequent addition to her miseries.

The treatment of this disease consists most essentially in absolute rest in bed during menstruation, and total suspension of marital life. I say rest in bed, because it is generally impossible to get women to rest on a couch. If you get them in bed they may stay there, but on a couch they will not rest whilst they have their clothes on. For medicines, there is nothing like potash and ergot, and there is nothing so bad as iron. In chronic metritis, anæmia is of course an almost inevitable symptom, and by inexperienced practitioners iron is usually given in large quantities, their wonderment increasing as the patient gets worse. If the uterine condition be cured as a preparatory step, iron will work marvels, but until then iron does more harm than good. Topical applications of astringents by the ordinary syringe are quite useless; but intrauterine remedies, administered properly, are powerful adjuvants to the general treatment. But before any one begins to meddle with the inside of the uterus, even to introduce a sound, let me beg of him to be certain that it has no unexpected contents. Sure of this, he may apply medicaments such as desiccated sulphate of zinc, carbolic acid, solutions of nitrate of silver or chromic acid, or even nitric acid, either by means of Playfair's probes or by my soluble rods. The former are the more ready and generally useful means, the latter the more elegant and effective. Of chromic acid let me say, that occasionally its application to the uterus produces the most extraordinary and immediate attacks of vomiting and purging, and that therefore it is not always a safe remedy. In cases where chronic metritis is the result of an acute process, very great caution must be exercised in applying any intrauterine medication, lest the original mischief be re-excited.

Acute endometritis is nearly always a result of gonorrhœal infection, though I have met with instances where it seems to have been catarrhal. It is always associated with severe spasmodic pain over the pubis shooting down the thighs and into the back, accompanied by a certain amount of fever; but its characteristic signs are a profuse yellow purulent discharge issuing from the os, and a good deal of tenderness when the uterus is touched. Rest in bed, pessaries of lead and opium, hot fomentations over the abdomen, or even a blister, with general antiphlogistic treatment are

necessary, and vaginal injections are to be sedulously avoided. After the acute stage has passed off, intrauterine medication may be begun cautiously, but the risk of sending the inflammation along the tubes must always be borne in mind.

Chronic endometritis may result from the acute process, but it is infinitely more frequently associated with the chronic metritis resulting from subinvolution, and is then to be treated by the topical application of astringents. It is sometimes met with in young unmarried women, associated with chronic ovaritis; and it is then a fertile source of bad health, and also, when they come to be married, of sterility. It is betrayed by profuse menstruation, followed by a leucorrhœa which is most abundant just after the period, getting less as the month goes on. It is to be cured by local applications already described, and by the treatment for chronic ovaritis as given elsewhere. There is a special form of endometritis * to which the name of *membranacea* has been added, on account of its peculiar feature being that the uterus throws off a membranous cast at intervals. This disease used to be known by the name of membranous dysmenorrhœa; but as it often exists without being in any way a dysmenorrhœa, and as the casts are sometimes thrown off at other times than the menstrual periods, I very much prefer the name of membranous endometritis.

This disease is far from uncommon, and its supposed rarity is due entirely to the want of its indications being properly looked for. It is also one of the most obstinate causes of dysmenorrhœa, and involves the necessity of long-continued treatment for its cure. The nature of the membrane has been a fertile source of discussion by gynæcologists, one party setting forth the view that the membrane is always the true deciduous surface of the uterus, and that its casting is due to some ovarian mischief; whilst other authorities hold that it is an adventitious structure, the result of an inflammatory action. I believe that the latter view is really in greater part the true one, though this may seem going back to an old-fashioned phase of gynæcopathology; but it is the result of a somewhat extended, and, I believe, a careful study of the subject. I have certainly met with a few cases of dysmenorrhœa in which shreds of membrane, and two cases where complete membranous casts of the uterus, were repeatedly found to be passed at or after menstruation, and which membranes were unquestionably the deciduous surface of the uterus. But these all occurred in married and sterile women, or in sterile women who ought to have been married. I never saw such a membrane passed by a virgin; and though I have examined a considerable number of shreds of membrane from virginal patients, I never saw a trace of structure in any of them. Such patients very often pass lumps of membrane at times which are not menstrual, and these are always associated with purulent discharge. All the cases of the discharge of truly deciduous membranes which have occurred in my practice have seemed to me to be cases of menstrual miscarriage of a peculiar kind, hitherto, as far as I can discover, incompletely described or altogether overlooked; but I do not mean

* I have lately seen a case in consultation where there was a chronic endometritis, the result of acute gonorrhœa, and which had persisted for years after the vaginal inflammation was completely cured. Every now and then this condition lit up a fresh urethral disturbance for the husband, who was, confessedly, the original cause of the trouble. This endometritis was easily cured by applications of carbolic acid, and then the husband's troubles ceased.

that this is sufficiently conclusive to enable me to assert that every case of membranous endometritis where the mucous surface of the uterus is shed, must necessarily involve unchastity in an unmarried patient.

The first feature of these cases is that their periods are irregular, the inter-menstrual time being very often protracted to five, six, seven, or even eight weeks. When it does come on, the period is short, and the loss not always great; neither is pain always a feature of the menstruation. But almost invariably, or at least in a majority of menstruations, shreds of membrane, or complete membranous casts of the uterine cavity, are passed, and these are always possessed of the microscopic characters of the uterine mucous surface. The case of one patient is so interesting, and my opportunities of studying it have been so complete, that I shall give its details in full.

In 1871 I was consulted by a lady who had been married for nearly twelve years without ever having become a mother. She suffered from irregular menstruation, which was occasionally painful, and when unwell and for a few days after, she usually, but not always, passed shreds of membrane. I examined this membrane repeatedly, and always found it to present abundant evidence of the peculiar glandular structure of the uterine mucous surface. In three instances, complete and closed casts were passed and preserved for me. The first two presented a uniformly villous appearance outside a smooth lining surface, which was covered by pavement epithelium, and they contained nothing but a small quantity of slightly albuminous and perfectly clear fluid. But the third specimen displayed its villous character more completely at one part of its external surface than elsewhere; and when it was opened at the corresponding point inside, there was a little pediculated button of white substance, which undoubtedly was an arrested embryo. Before she passed this particular cast, she had gone nearly nine weeks without menstruating, the longest time she had ever missed in her life. Just after this she became a widow, and her menstruation, though scanty, became quite regular and perfectly free from membrane. She married within a twelvemonth of the death of her first husband, had a healthy child a year afterwards, and she is now the mother of four. It is impossible not to come to the conclusion that in this case most of the menstruations were really miscarriages, and that what might have been set down as a case of membranous dysmenorrhœa was really an instance of repeated miscarriage due to an incomplete sterility on the part of the husband. But when I inquired into the history of her first married life, I obtained no evidence of incapacity in the male, but there certainly must have been a lack of fertility. This is a condition quite analogous to repeated miscarriages due to syphilis in the husband.

This is curiously substantiated by another case which was under my care almost at the same time. She had been married ten years, and had never had a child, though she believed she had had several miscarriages, none of which had gone over the fourth month; but in this part of the history the account is not very clear. She stated distinctly, however, that previous to her marriage menstruation had been regular and free from pain, but that after marriage it became irregular and painful. Her medical attendant, Mr. Hall Wright, procured for me several bags of membrane which she passed at periods, and which he rightly regarded as miscarriages. They were always very small, never more than three centimetres in their greatest diameter, presented all the characters of the decidua described in the other case, except that they nearly always had a rudi-

mentary representation of the embryo, though in one there was no trace of it. She had a large and increasing ovarian tumor, which I removed; and I hoped that, as she recovered, the altered nutrition of the organs might induce a more complete fulfilment of their functions. But in this I have been disappointed, and the same menstrual miscarriages are still occurring at intervals, although it is nearly five years since the operation, and she is otherwise in perfect health.

I have had cases under my care where such miscarriages, occurring repeatedly, went on to the fourth or fifth month, the localized villi, already referred to, becoming developed into a large and healthy-looking placenta, of almost globular shape, in the midst of which was a small cavity, holding a few spoonfuls of limpid fluid. This undoubtedly represented the cavity of the ovum; for sometimes it had a stunted embryo, like a shirt button sewn on to its wall, but just as often there was no trace of it. Other examples of this sort have over and over again been submitted to me by practitioners for an opinion as to their nature. I have given to them the name of "fruitless pregnancies," and I believe they are caused by an absence of complete fertility in one or other parent, most probably on the part of the male; and that the so-called hydatidiform mole is merely a variety of them.

Certain it is that these cases have got mixed up with instances of true endometritis membranacea, though there is no evidence whatever that after the decidua is thrown off there is any inflammatory affection of the surface. Do instances ever occur of the uterus of a virgin throwing off its mucous surface at the menstrual period, so that its glandular structure can be recognized in the shreds? There may be such; but as I have closely watched for one, and have never seen it, I am very sceptical on the subject.

The other class of cases contains those in which there is a true exudative chronic endometritis. These are met with in married as well as in single women, but the married patients are always sterile. Menstruation is generally regular, often profuse, nearly always painful, and although the membrane generally appears at that time, its dehiscence is by no means confined to the menstrual periods. I have often removed it through the speculum by the probe, at a time quite intermediate between the menstrual periods. It is an extremely obstinate disease, and in some cases it seems possible only to relieve it, but not to cure it. Sometimes it begins late in life, but generally the patients state that their sufferings date almost from puberty. Their menstrual pain is chiefly of an expulsive character, and begins immediately after the flow appears; and the period is always followed by a leucorrhœal discharge, which may or may not disappear before the next term. The discovery of membranous shreds, which are not merely washed clots, will complete the diagnosis.

In these sufferers a stricture of the internal os often exists, and the division of it generally relieves them greatly. The most efficient remedy is that which I first saw employed in Sir James Simpson's practice, the use of solid rods of exsiccated sulphate of zinc. He was also fond of using solid nitrate of silver in the same way; and I am bound to say that though it is far more painful than the zinc, it is on the whole safer.

In using the terms "perimetritis" and "parametritis," as introduced by Virchow and advocated by Matthews Duncan, I feel that though "parametritis" is not a word likely to be recommended by classics, yet that there is so much convenience, compactness and contrast in the two terms, that their perpetuation is advisable. Medical nomenclature is not

noted for the purity of its construction, so that a slight defect in this direction is hardly an argument against convenience.

By perimetritis we mean an inflammatory action in the peritoneal investment of the uterus, so that the products of the diseased action are found chiefly, or it may be entirely, within the serous cavity. By parametritis we mean inflammation of the cellular tissue in the neighborhood of the uterus, the results of that process being mainly found outside the peritoneum. To the uninitiated this may seem an arbitrary and useless distinction; but it will need but a limited amount of practice to make it evident that in the important matters of prognosis and treatment the difence is of the utmost importance.

Perimetritis is a much more fatal disease than parametritis, and occurs with greater frequency in association with two particular conditions. These are parturition, either at the full time or prematurely, and gonorrhœal infection. If it be borne in mind that the peritoneum must be regarded as a great lymph gland, in which the most important processes of absorption are carried on, we see at once an explanation of the readiness with which it becomes affected by any septic influence, and the fatality which accompanies such infection. By far the larger number of cases of perimetritis, or pelvic peritonitis, are the result of some septic infection of parturient women, and most of them therefore come under the care of the obstetric physician. Surgeons unfortunately also see it too often after ovariotomy and other operations; but as yet we have failed in such cases, where the precautions advocated elsewhere have been taken, to trace it to any other causes than traumatism. Puerperal and other forms of septic perimetritis are very fatal, for it rapidly becomes general peritonitis. It is ushered in by pain and tenderness over the uterus, quick pulse and high temperature, vomiting and hiccup, and distention of the abdomen. The only remedies worth mentioning are opium, warm fomentations, and blisters; but it is only exceptional that even their use is successful. It has been proposed in such cases to open and clean out the peritoneal cavity, but I have not yet followed out this plan, nor do I know any one who has.

Perimetritis from the extension of a gonorrhœal inflammation along the tubes, is described under the head of ovaritis, and little more need here be said of it, save that it is a very serious but not necessarily fatal disease, there being much less tendency apparently to the production of general peritonitis than in the septic form. Opiate pessaries and opium by the rectum and mouth, with warm fomentations and perhaps leeches over the pubis, are the best remedies. The lasting results of this disease are a tendency to the recurrence of the inflammatory mischief, functional disturbance of the ovaries, sterility, and very often an inability to resume marital functions. Its diagnosis is rendered difficult in the majority of the cases by the absence of history, for the patient may really be ignorant of the cause of her sufferings, or she may conceal it intentionally. Physical investigation at first yields but scanty information; but as the disease advances, the uterus will be found fixed, and pushed somewhat forwards, and the whole roof of the pelvis occupied by a boggy swelling. The excessive tenderness, with continuous high temperature, will discriminate the disease from mere hæmatocele; for even when suppuration occurs in or round a hæmatocele, the temperature curve shows diurnal remissions which are not seen in acute perimetritis.

In septic cases the inflammatory effusion takes the form of pus, but in those of a non-septic character it seems to have a greater tendency to

appear as lymph, and this difference doubtless explains the different issues. The lymph, in cases of recovery, often binds the uterus down to the sacrum, or to neighboring organs, and in this way sometimes makes the patient a permanent invalid. One peculiar result of this process may be met with occasionally in what has been described as the encysted retro-uterine abscess, which consists of the shutting off of the cul-de-sac of Douglas by adhesion, and its conversion into an abscess. In a case of which I saw the post-mortem many years ago, this abscess seemed to have burst at intervals into the general peritoneal cavity and caused a limited peritonitis. Had it been diagnosed, a cure might have been easily effected by opening the abscess from the vagina; and if any indications of fluctuation should present themselves behind the uterus, in association with severe pyrexial symptoms, the surgeon should not hesitate to explore it by the aspirator. It must be borne in mind that fatal perimetritis may follow almost any operation on the uterus, for Simpson used to tell us of a case where death followed the mere passage of the sound.

Parametritis is, on the contrary, rarely fatal. Out of a very large number of cases which have come under my care, I can call only one fatal result to mind, and as that occurred in a patient after miscarriage, it is very doubtful whether it was not caused by septicæmia. Parametritis occurs after labor, perhaps as often as from any other cause, and seems especially apt to affect primiparæ; and if I spoke of my own experience, I should say that it was a much more common disease than perimetritis: but this may be explained by the fact that I am seldom called to febrile illnesses immediately after labor, such cases usually coming under the notice of a physician. Parametritis is much more slow in its onset than perimetritis, for it usually is ushered in by a rigor towards the end of the first week after labor, and its more acute symptoms are not established for many days. The pain and tenderness over the pubis are severe, but not so extreme as in the other disease, and they are generally referred particularly to one side; and neither pulse nor temperature curve ever reach such elevations as they do in perimetritis. Very early in the disease, a mass may be felt in the vagina to one or other side of the uterus, and occasionally on both sides. It is very tender, and at first very hard; and if on one side only, it pushes the uterus well over to the other. It moves with the uterus, but seems, as it were, to anchor it. As the case progresses, hectic symptoms are established, and the mass in the pelvis will be found to fluctuate, and then is the time to open the abscess from the vagina by the knife, or, better still, by the aspirator. This is of course supposing that the inflammation has attacked the cellular tissue close to the uterus; but sometimes the tissue involved, whilst still in the broad ligament and quite outside the peritoneum, is nearer the pelvic bones than the uterus. Then the case is more difficult to diagnose, because the lump may not be felt from the vagina at all, and it may be necessary to place the patient under an anæsthetic before a diagnosis can be made; and in all cases of doubt in pelvic disease, this is a step which should be taken. If the lump is felt near the brim of the pelvis, it will, if it should suppurate, take a much longer time to come to the surface, and if on the left side, it may open into the rectum; or, on either side, it may find its way into the bladder. Both of these conditions are unusual, but I have met with them both, and have found them very intractable. Usually the abscess finds its way to the surface close above Poupart's ligament, and great care must be taken in opening it, if it be thought

desirable to do so, for there may be a piece of adherent intestine in front of it. Not long ago I attended a case of double parametritis, along with my friend Mr. Wood, of Moseley, and having opened the abscess on the left side, we were about to do the same on the right, when I discovered that there was a tympanitic note all over it, which was removed by pressure, but returned again immediately, so that probably the intestine was adherent. We allowed the second abscess to empty itself, and the patient made a perfect recovery.

Sometimes the effusion never breaks down into an abscess, but consolidates into a permanent mass. This is very awkward if it should happen in the left broad ligament, as in a case which I attended with Mr. Birt, of Stourbridge, where it gadually tightened round the rectum, forming an annular stricture which I had to dilate. In parametritis there is of course generally some effusion on the peritoneal surface, so that visceral adhesions may be formed. Sterility is therefore a result to be anticipated, but it is not to be predicted; for even in cases of double parametritis I have seen the patients have several children afterwards. It is not unusual, however, to find that women who have had only one child give a history, and have in them still the evidence, of an attack of parametritis following their one labor. A large number of cases of sterility are also due to parametritis occurring after a miscarriage within the first few months of married life, and I believe that many of these cases are due to the sexual excesses then indulged in. Honeymoon trips are also fertile sources of parametritis; and medical advisers would do well always to recommend young women about to submit to the changes and risks involved in married life, to rest until the economy has adapted itself to its new conditions, instead of rushing about under the exciting stimulus of sight-seeing. It has repeatedly happened to me to find permanent damage induced by this senseless custom.

The treatment of parametritis consists, first of all, in absolute rest in bed, with opiates and warm fomentations or poultices. If the tumor can be felt from the vagina, it should be tapped as soon as the indications of the presence of pus are clear. If the abscess opens above Poupart's ligament, a good deal of patience must be exercised till the efforts of nature have done their utmost, assistance being given by tonics and nourishing diet, and by removal to sea air. If, however, a sinus remains, a cautious effort must be made to get a counter opening in the vagina, according to Simpson's plan. This is done by passing a sound through the sinus towards the vagina, and, if it can be felt there, cutting upon it, and drawing a drainage-tube through. This operation is one of great delicacy, and only to be undertaken by a skilled surgeon, when other means seem insufficient to ward off dangerous exhaustion. It has this advantage, that it is nearly always successful. In one case under my care it failed because, as we afterwards found, the iliac bone had been laid bare by the abscess, and had become carious. When an opening has been made into the bladder, the condition is very difficult to remedy; but if the necessity of the case demanded it, I do not think that I should hesitate to open the bladder, and, if possible, direct a passage for the discharge from the abscess into the vagina. If this can be done, the tendency of the cavity always is to close; and I have twice been able to close large suppurating cavities in connection with the uterus, but which had opened into the rectum, by making a counter opening from the vagina behind the cervix. Parametritic abscesses rarely open into the peritoneum, and, according to my experience, never into the cavity of the uterus.

Enough of subinvolution has already been said in connection with chronic metritis. Of the converse condition, superinvolution of the uterus, it must first be said that it is an extremely rare affection, and that all we know about it is due to Simpson. It is a condition perfectly analogous in its details to arrest of development of the uterus, with the difference in history that the superinvolved uterus has at one time been so large as to be pregnant. How the normal involution is carried on to hypererchesis we do not know; and, as far as I can discover, we have only one description of the post-mortem appearance of a uterus so affected, that given originally by Simpson. The patient was twenty years of age, and had never menstruated after her first delivery; but no history is given of any febrile illness to which might have been attributed the abnormal absorption of the uterine substance. After death the uterus was only an inch and a half long, and its walls were less than half their normal thickness, their tissue appearing dense and fibrous. The ovaries were also much atrophied, and their dense fibrous tissue presented no appearance of Graafian vesicles. In this case it is of course doubtful whether the process was truly one of ovarian atrophy, followed by atrophy of the uterus in obedience to the usual law that all useless organs tend to disappear. Several cases of what I have had reason to believe was true superinvolution of the uterus have come under my care, but in every one there has been some febrile illness, generally of a zymotic character, which occurred at, or soon after, a labor or miscarriage; and my impression is that, of all the cases, those in which a miscarriage was the origin of the trouble were in the majority. In fact, I am strongly disposed to regard superinvolution as a result of an atrophic ovaritis occurring at the time when involution is going on. Thus in a case which I published in the London Obstetrical Journal for May, 1873, and which certainly was the most pronounced case of superinvolution I have ever seen, the patient had had scarlet fever during the first week of her convalescence from her second labor. She came under my care in 1871, seven years after the fever, and has remained under observation ever since. When I first saw her, the uterus was perfectly infantile, the vaginal portion of the cervix being represented only by a pimple. Her menstrual periods had disappeared, and were replaced by severe epileptiform seizures, as will be found detailed in the Journal. I succeeded in getting menstruation restored, and the uterus increased in size by the use of galvanic pessaries; and as her periods became re-established, the epilepsy disappeared. But when I discontinued the use of the pessary, the menstruation slowly disappeared and the fits came gradually back, and this therapeutical experiment has been several times repeated with uniform results; and that the fits are epileptic is made certain by the severe injuries the poor woman inflicts upon herself during the attacks. Looking back on this case and others, and aided by the evidence of other facts referred to under the head of exanthematic ovaritis, I am led to believe that superinvolution is explained by the occurrence of ovaritis, followed by atrophy, during the puerperal month; and that the uterus merely follows in the steps of the ovary, carrying the process further, however, because it had been already in action, and stopping it only when perhaps there was no more muscular tissue left to absorb.* I do not suppose that the exciting ovaritis need

* It is not to be supposed for a moment, however, that the uterus ever can be so absorbed as to disappear altogether, even though it may be so thin as that a sound can

necessarily be exanthematic; but peri-oophoritis, or inflammatory action affecting the covering of the ovary, does not seem to affect menstruation, it rather inclines to induce sterility only. These views would explain many facts which are otherwise irreconcilable, and, what is most of all remarkable, the rarity of superinvolution. First of all, exanthematic or other interstitial ovaritis such as leads to ovarian atrophy and is not fatal, is very rare in puerperal women, the great majority of such cases ending in death. The few who recover are likely to suffer from superinvolution. Again, the numbers of non-puerperal women who suffer from ovarian atrophy, the result of inflammation, do not at the same time have atrophy of the uterus, because when the ovarian process began the uterus was not already undergoing involution. This explanation is quite in accordance with the history of and the appearances in Simpson's case, and also in harmony with the general principles of ovarian physiology. Its practical bearing is, that though in such cases we may get temporary relief from the galvanic stem, that relief will cease with the use of the instrument, or when, as sometimes happens, its stimulus becomes insufficient.

By the term hydrometra is meant the retention of the normal fluid secretion of the mucous surface of the uterus, and therefore hydramnios must be excluded from the definition; though the latter disease has been evidently included by some authors under the term hydrometra in the description of the diseases which may be mistaken for ovarian dropsy. Hydrometra results from the closure of the os or cervix, so that the secretion cannot obtain an exit; such closure taking place from cicatricial contraction after ulceration, or from some mechanical injury. Its symptoms consist of expulsive pains somewhat resembling those of kolpostasis or retention of the menses, but by no means so acute as these. It is a condition almost entirely confined, *ex necessitate*, to women who have passed the climacteric period of life, and it very rarely causes the uterus to reach any great size, because the greater part of the secretion of the internal mucous surface is capable of resorption, leaving behind only the more solid elements of the mucus. Simpson narrates a case of one unusual form of it, in which he drew off large quantities of serous fluid from the cavity of a uterus which had been distended to the size of the fifth or sixth month of pregnancy, the fluid being due to a cancroid tumor at the fundus. In such a case, the symptoms would of course be severe and would necessitate a careful examination. The first thought would be to eliminate the possibility of pregnancy, and then to open up the closed canal.

In September, 1878, I operated on a case of hydrometra in a young girl where none of the physical signs could have made an exact diagnosis possible. Menstruation began at 16 and never was regular. She missed often for three or four months, and when the flow did occur it was always scant, but never painful. The last period she had was in April, 1877, and in July of the same year it was noticed that she was increasing in size. In July, 1878, I saw her in consultation with Dr. Eshelby, of Stonehouse, and diagnosed a monocystic tumor, probably parovarian, and I advised that she should be tapped. This Dr. Eshelby carried out and removed

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be passed through it, as in the case recorded in the British Medical Journal for 1872, p. 408, by Mr. Whitehead, of Manchester. At p. 465 of the same volume, I offered the more feasible explanation now given, and to which I shall allude more at length under the head of metro-peritoneal fistula.

seven quarts of clear limpid fluid. The cyst again filled, and she came to Birmingham to have it removed, about two months after the tapping. I made a median incision four inches long and passed through the usual structures, but I searched in vain for any indication of the peritoneal layer. The wall of the cyst was evidently muscular, and in opening into the cavity, and after removing about four quarts of limpid serum, it became evident that it was constituted by the body of the uterus. The reasons for this conclusion were, that it was lined by shreds of membrane almost loose, and presenting all the characters of the deciduous membrane; the cyst contracted remarkably during the operation; the cervix could be felt from the vagina to be, as it were, set on to the base of the cyst, and to be quite occluded; and finally, the shape of the cyst, especially after contraction, was bifid at the fundus in the direction of the uterine cornua, and the intestines went down behind the posterior wall quite to the insertion of the vagina. I did not venture to carry my incision up so as to open the peritoneal cavity, but my belief is that the absence of the anterior peritoneal fold was congenital. I secured a drainage tube in the wound and closed it. The cyst rapidly contracted, the patient made an uninterrupted recovery, is now perfectly well, but she has never menstruated since the operation.

Looking back over this case, I do not see how a more accurate diagnosis could have been made. Before the first tapping, I noted that the uterus was intimately associated with the tumor, as it nearly always is in cases of parovarian cysts. I do not remember that I tried to pass the sound, and most probably I did not. I do not think, however, that if I had tried and failed, as I most assuredly would have done, that I should have been put on my guard as to the true nature of the case. If I had persevered and succeeded in forcing a passage up through the cervix I might have cured the patient in this way, but my impression is that the risk would have been far greater, and the chance of cure infinitely less than by the process of abdominal section.

I have already spoken of the symptoms, diagnosis, and treatment of cases where a portion or the whole of the placenta has been retained after labor or a miscarriage, and little remains to be said except that I wish again to dwell upon the frequency with which such retention takes place, and to urge the duty of the practitioner to be ever on the alert to its possibility. Nurses and midwives constantly tell us that they have seen the after-birth, and that it was entire; and I have even heard competent practitioners declare that they were sure it was all away in cases where I have had to remove portions. No one can be sure of its entire removal. Indeed, there may be subsidiary placentæ, in the form of separate cotyledons, which no amount of examination of the major placenta could make us suspect the existence of. A remarkable instance of this was lately brought under my notice by Mr. J. B. Jackson, in whose practice a placental cotyledon of large size, and which never could have had any intimate relation with the rest of the organ, was passed two or three days after the birth of the latter. Persistent discharge of a watery, fœtid, or especially of a bloody kind, after the lapse of the ordinary time for the disappearance of the lochia, should always be a reason for a careful examination; and after a miscarriage, the continuance of hæmorrhage or its recurrence should be similarly considered.

Sometimes cases of persistent uterine hæmorrhage come to us with a history as if the patient were pregnant, and we find the uterus enlarged, but fail to discover the sounds of the fœtal heart or other definite signs

of pregnancy. There is often also a continuous hydrorrhœa, which would be suggestive of cancer if its date were not too recent to be in accord with the greatly increased size of the uterus. Such cases may be instances either of a dead ovum with delayed miscarriage, or of the hydatidiform mole. In any case, I believe, persistent uterine hæmorrhage which resists rest, ergot and bromide of potassium, requires active measures, so that I never hesitate to introduce a sponge tent to facilitate the expulsion of the uterine contents. The hydatidiform mole rarely is retained in the uterus more than five months, and in the great majority of instances is expelled much earlier and without any risk. It is due to the dropsical hypertrophy of the villi of the chorion in an incompletely fertilized ovum, and it is apt to recur in the same patient. I have under my care now a woman who has had five of these moles, and is now, for the first time, pregnant with a living child; but we were not certain of this till nearly the sixth month of her pregnancy, when the fœtal heart was heard. I believe the pathology of this disease to be somewhat similar to the cases of incompletely fertilized ova described under the head of endometritis membranacea, for they certainly are the result of impregnation.

Hydatids of the pelvic peritoneal surface is, at least in this country, a very rare disease; but I have seen one case, in conjunction with my friend Mr. Langley Browne, of West Bromwich, in which we were not only able to diagnose them, but by tapping the mass behind the uterus we completely cured them. The case is admirably given by Mr. Browne in a report in the Birmingham Medical Review for July, 1876, to which I am indebted for the following resumé. There was a fluctuating tumor in the recto-uterine cul-de-sac, which we believed to be a mass of hydatids, because in the abdomen was another fluctuating mass attached apparently to the omentum. I tapped the pelvis and drew off the contents of the mass felt there; and from this operation a sharp attack of peritonitis followed, which seemed to result in the death of a number of other colonies, some of which at least found their way in some mysterious fashion through the wall of the bladder, and were extruded by the urethra. A large jarful of cysts were so passed, much more than the bladder could have contained, and there was no kidney tumor to account for them; nor is there reason to believe they grew in the bladder. The explanation may be that they were really extra-peritoneal, or that the pelvic mass may have been a ureter. The scolices found in them were pronounced by Dr. Cobbold to be those of *echinococcus hominis*, and the patient has made a perfect recovery.

I have ventured to retain the term pelvic hematocele, because it is now sanctioned by quite a long-continued usage, and because it includes the two varieties of the accident under which all the instances must be classed. Every consideration, whether based upon the pathology, the prognosis, or the treatment, bears out the division of pelvic hæmatocele into the intra-peritoneal and extra-peritoneal forms; and although there are some points of origin common to the two, in little else can they be said to have anything akin.

First of all, it must of course be admitted that the authors who follow Bernutz in saying that hæmatocele is only a symptom and not of itself a disease, are technically right; but as it is the presence of blood in an unusual position which is the source of danger to the patient in ninety-nine cases out of a hundred, and as in all, even the hundredth, the cause and source of the hæmorrhage are beyond our reach, if not beyond our knowledge as well, we may cease to hold such fine distinctions, and say at once

that an effusion of blood into the pelvis is a very serious disease, and a source of diseases. Upon the position of that effusion most important questions depend, and much uncertainty seems yet to exist regarding some of them. Thus the relative frequency of intra- and extra-peritoneal hæmatocele is yet a matter of discussion; and if we take only post-mortem records into account, I can understand those who hold, with Bernutz, that the intra-peritoneal is the more common, and that extra-peritoneal hæmatocele is very rare. But if I take my own clinical experience, I must believe that the extra-peritoneal is probably ten or twelve times more common than the other, and also that it is very seldom fatal. Of course it is evident that an intra-peritoneal collection of blood in the pelvis may arise from any of a large number of accidents to organs which are not pelvic, and with which we have at present nothing to do. It must be also just as evident that when the source of hæmorrhage is in a pelvic organ, there is infinitely less probability of the bleeding being arrested by natural processes, in time to obviate death, than if it were taking place into confined cellular tissue. This is at least one reason why so large a number, in my opinion the great majority, of cases of intra-peritoneal hæmatocele are fatal.

Of all the sources of intra-peritoneal hæmatocele, I believe the most common to be rupture of the Fallopian tube in tubal pregnancy; indeed, out of seven fatal cases which I have seen this was the cause in six, the seventh having arisen from the bursting of an aneurism of the coronary artery of the stomach. Other sources have been mentioned by authors, such as a ruptured utero-ovarian vein, a ruptured ovisac or ovarian cyst, some cachexia such as purpura or hæmophilia, or the reflux of menstrual blood from the uterus; the latter source being one, however, which I must say seems to me very improbable.* Of the seven fatal cases, only four were under my own charge before death, and these were the only cases in which I have ever diagnosed intra-peritoneal hæmatocele, except the two cases of ovariotomy alluded to elsewhere. In none of them did I diagnose the Fallopian pregnancy, though in all I admitted its likelihood; but in one of them it was diagnosed, from the history and previous condition of the tumor, by my friend Mr. Hall-Wright, with whom I saw the case. It is hardly therefore to be wondered at that I regard intra-peritoneal hæmatocele as a very fatal disease.

On the contrary, out of a large number of cases of extra-peritoneal effusion of blood, a larger number than I have any means of correctly estimating, I have seen only one death, and that resulted really from a refusal by the patient to be tapped after suppuration had occurred in the sac. The reason of this relatively favorable issue is, that first of all in extra-peritoneal hæmatocele the amount of blood lost is always limited by the capacity of the tissue into which it is poured, and when suppuration occurs it can be readily diagnosed and safely treated; whilst the occurrence of intra-peritoneal hæmorrhage is often not recognized till it is too late to interfere, and even if recognized in time, the operation for relief is as likely to do harm as good.

It becomes, therefore, of the utmost importance to discriminate between the two varieties, for upon the diagnosis may depend the life of the patient. The first feature to be examined is the history of the patient. In both varieties the accession is usually sudden, but its characters and

* I have seen two cases of small intra-peritoneal hæmatocele after the division of an ovarian pedicle by the écraseur (see chapter on diseases of the ovaries), but these were of no importance.

relations vary greatly. Thus if the patient was menstruating at the time of the attack, the probabilities are immense in favor of its being extra-peritoneal; whilst if,on the contrary, she has not menstruated for eight or ten weeks, especially if she is a married woman, and unfortunately even if she is not, suspicion of tubal pregnancy must at once be entertained. If, in addition to the fact that the patient has been menstruating, there is a history of a chill, exposure to cold, and a sudden arrest of the flow, the probabilities in favor of the less deadly form are greatly increased. In women leading a marital life this variety often follows coition indulged in too soon after labor or a miscarriage, or during menstruation. In both forms the seizure is sudden, but in the intra-peritoneal variety the symptoms are usually both sudden and very severe. Thus a woman may be seized with a sudden pain, followed by sickness and fainting, rapidly running into collapse, and ending in death in a few hours from pelvic hæmorrhage into the peritoneum. But I have never experienced anything approaching even to alarm from the immediate symptoms of an extra-peritoneal hæmatocele. Again, as happened in Mr. Hall-Wright's patient, death may occur apparently from recurrence of the hæmorrhage after an interval of many days; or, as in another of my cases, from secondary gen eral peritonitis. But in extra-peritoneal hæmatocele I have seldom seen any evidence of repetitive hæmorrhage, and I never saw anything beyond a very limited peritonitis, or what seemed to be such. In that disease the inflammatory symptoms are always strictly local, at least at first, and they will most probably remain so if the case be properly treated. The fatal case already spoken of seemed to die more from exhaustion, or perhaps from septic poisoning, than from any extension of the inflammation to the peritoneum, of which there never was any clear evidence.

It must be distinctly understood that I am far from denying that intra-peritoneal hæmatocele may possibly occur much more frequently than my experience leads me to believe; but if it is so, then I must say that the effusions must usually be of such slight extent that they either never come under notice, or are so small as not to be capable of diagnosis, and that the resorptive power of the healthy peritoneum is so great that it rapidly removes all traces of the effusion. It is possible, indeed some authorities state it is as a certainty, that at every rupture of an ovarian vesicle there is a small effusion of blood into the peritoneum; and certainly such an occurrence must take place very often, yet it leaves no trace. My remarks are therefore confined to those cases where the effusion is large enough to attract attention. In these, the general symptoms are those of concealed hæmorrhage. The patient becomes bleached, faint, and collapsed; and if the vagina be examined by touch, a boggy fulness may be found round and behind the uterus; but if the blood has not had time to coagulate, this will not be discovered.* If the patient survives the immediate effects, no difficulty will be encountered in interpretating the fixation of the uterus in the doughy pelvic mass, felt as a distinct and limited tumor in the rectum, as a blood clot, especially if the patient be seen before the accession of peritonitis. This limitation of the tumor in the rectum is another most important feature in the differential diagnosis, and it is of course due to the capsulation of the clot by the peritoneum of Douglas' pouch. If the febrile symptoms have set in and the clot has broken down, the

* This fulness is never felt as a distinct tumor from above, this being a cardinal point in the diagnosis between the two varieties.

diagnosis will be most difficult, in fact it will be mere guess-work, and any operative interference hardly justifiable.

Even in the case already referred to, Mr. Hall-Wright's case of tubal rupture, where we were certain of the fixation of the uterus in a clot within the peritoneum, but which did not appear as a tumor above the brim, and where we suspected a renewal of the hæmorrhage, and had even some indication as to its cause, we did not venture upon any operation, and the post-mortem showed we were right in our reticence (see extra-uterine pregnancy). Suppose that the peritoneum be tapped or opened from the vagina, is it likely either that the clots can be removed or the hemorrhage arrested? And there is the immense risk of setting up peritonitis where it did not exist, or of aggravating it if already initiated. To open the abdomen in the middle line is a proceeding which first of all demands the justification of clear grounds of diagnosis. If the case be one of tubal pregnancy, the doubt of a favorable issue to the operation for the arrest of hæmorrhage is, in my opinion, so great as to place it out of the question. If the source of the bleeding be of some other kind, abdominal section in the living body is not likely to discover it. Briefly, then, I think that all cases of intra-peritoneal hæmatocele should be left alone save under the most exceptional circumstances, and should be treated on general principles only.

The diagnosis of extra-peritoneal hæmatocele is, on the contrary, very simple, and its treatment is based upon the soundest principles. If seen in the early stage, the history of the case, together with the presence of a tumor outside the uterus and intimately attached to it, more or less fixed in the pelvis, and always to be felt from above as a distinct tumor, and the absence of febrile symptoms, make the diagnosis easy. The tumor is generally soft or semi-fluctuating; but as it always embraces the uterus more or less, and prevents the organ moving, it is not likely to be confounded either with an ovarian cyst or a solid fibroid, always supposing, as I do, that a careful examination is made under ether. If the practitioner feels justified in using the sound—but he has no need to do so unless the symptoms are really urgent and an immediate diagnosis is necessary—he will find the uterus of normal length, unless there has been a recent labor. Examination by the rectum will help him greatly by usually displaying the fact that the tumor seems to become lost right and left of the tube, and not to present the distinct contour of an ovarian or fibroid tumor, or as is presented by a blood clot in Douglas' pouch. Here let me just point out an error which is somewhat common, yet so absurd as to be hardly credible save by those who frequently see it as I do. It is that inexperienced practitioners sometimes mistake the cervix felt from the rectum for a tumor of some sort; and only a few weeks ago I had much difficulty in persuading a practitioner of his mistake. Indeed, I did so only by making him feel the uterus with a sound in it.

The size of an extra-peritoneal hæmatocele is a very important feature in the diagnosis, still more especially in the treatment. I have seen one containing some pints of clot, and reaching not far short of the umbilicus. This case occurred in the practice of Mr. Hoare, of Aston, and had been pronounced a fibroid tumor by another consultant before I saw her. The symptoms were urgent, for she had complete intestinal obstruction. Placing her under an anæsthetic, I found the rectum quite flattened by a soft boggy mass, which was lost on either side, and appeared above the pelvis as a round, smooth, and fluctuating tumor. The uterus seemed to be quite in its centre, and of normal length, so that I had no hesitation in

making a free incision behind the cervix and scooping out an enormous quantity of recent clot. The patient recovered perfectly. But the majority of cases of hæmatocele should be left alone, for they will become absorbed in greater part, though they do not seem ever to disappear entirely. Thus I attended a case with Mr. Brown, of Bath Row, Birmingham, almost as large as that already described, in which there were no urgent symptoms, and which we therefore did not interfere with in any way. In about four months it had nearly disappeared, leaving only the uterus fixed on to the sacrum, this seeming to be a very common result of hæmatocele.

It is in those cases where inflammatory action follows the effusion that operative interference is demanded, and where the diagnosis is rendered somewhat difficult if the case is seen only after the secondary process has begun. The choice lies between parametritis and suppurating hæmatocele, and it is sometimes important to decide which it is. The history will sometimes help; and if the uterus be found pushed very markedly to one or other side of the tumor, the probability is in favor of parametritis. But an almost infallible aid exists in the use of the aspirator. If pus only comes, it is a simple abscess, and merely needs emptying through the needle. But if clot débris come through the needle mixed up in pus, it is a case of suppurating hæmatocele, and a free incision is necessary. Occasionally we get cases of old neglected hæmatoceles which have suppurated and burst into the rectum, the point of election for their natural opening, and they will go on discharging quantities of pus for years, exhausting the patient, till a counter opening is made in the vagina. In my hands this has been a perfectly successful operation.

Since Simpson first brought the importance of uterine displacements prominently before the notice of gynæcologists in 1848, a great deal has been written on the subject; but I cannot find that any more complete and satisfactory account of them has been given since the appearance of his clinical lectures. Many writers have differed from him in their estimates of the relative frequency and importance of the various forms of uterine flexion and version; but as my own experience grows, I find more and more reason to adhere to the views he used to impress in his lectures, and the illustrations I used to see of them in his practice I now find corroborated daily in my own. It is amusing to notice the various aspects in which different writers view this really simple subject, how they run from one extreme to the other, and raise difficulties by the introduction of wholly needless complications. One eminent gynæcologist seems to discover a flexion or a version in every patient he sees; I have even found him endeavoring to arrest hæmorrhage due to a piece of retained placenta, by a complicated instrument placed to rectify a supposed retroflexion. In the practice of another equally eminent specialist, no flexions or versions ever seem to occur, and everything is set down to uterine "inflammation and irritation," and these are treated by useless drugs. All this is very unfortunate for the profession, and greatly interferes with the confidence of both profession and public in special practitioners. It is a difficult matter to rid ourselves of prejudices and predilections, and there is a constant tendency in the human mind to use only one focal adjustment of the mental lenses for all kinds of objects. In the matter of uterine displacements, I believe that this tendency will be completely obviated by a careful study of cases, aided by the light which Simpson's strong common sense has thrown upon them.

When Scanzoni tells us gravely that anteflexions are at least eight

times more frequent than retroflexions, we can only conclude that the distinguished Wurtzburg Professor has been looking for displacements with too great an eagerness, has found them in conditions which are wholly natural, and has not paid a due attention to the strictness of phraseology.

Let me first say that Simpson's original division of terms should be strictly adhered to; that is, that a *version* should mean only such a condition as that in which the uterus is turned out of its proper axis without its tube being at all, or at least greatly, bent; and that a *flexion* should mean only a bending of the tube upon itself, with more or less of a sharp curvature. The normal condition of the uterus in the nullipara is anteversion, with more or less tendency to anteflexion, the curve of the tube being gradual; and just in proportion as we go backwards in the development of the organ do we find this condition exaggerated. Any uterus, therefore, which is incompletely developed is almost sure to be markedly anteverted, if not anteflected. But to treat this as a diseased condition, unless there be very definite symptoms associated with it, is the merest charlatanry; and the practice of doing do is one which has brought no small amount of odium upon special practitioners. In this practice we find the basis of such results as those given by authors who seem to hold that fifty per cent. of all the women we meet are the victims of a displacement.

Young women suffering from dysmenorrhœa are often found to have a so-called "displacement in front," but that is no reason for torturing them with all kinds of pessaries, intra-uterine and vaginal, unless the failure of constitutional treatment affords a justification for local interference. The whole organs are insufficiently developed, but that may in all probability be set right by a prolonged course of weak chalybeates, stimulating the organs at the menstrual periods by hot applications or hip-baths, and the addition of an aloes-and-iron pill night and morning. If these fail, then the cautious employment of the intra-uterine galvanic stem is the proper course, as recommended in the chapter on diseases of the ovaries. I have met with a few cases, but they have been very few, where there really seemed to be an immense amount of relief obtained from symptoms of pressure on the bladder by wearing a ring pessary to support an anteflected uterus; but in other cases where the displacement seemed of more importance, the pessaries were of no use. I do not know how to explain these discrepancies, and my only consolation is that Simpson used to be quite as much puzzled by them. In cases of married women suffering from those vague symptoms of oppression and weight in the groins, and shooting pains in the back and thighs, which are set down indiscriminately as due to a misplacement, I have seen complete and wholly inexplicable relief follow the use of a ring pessary, though no misplacement could be found to justify its introduction, and in these I employed it chiefly because I had tried everything else in vain. Probably there was some painful spot, in an ovary or elsewhere, which was shielded by the pessary; but further than by this supposition I cannot explain these cases. In unmarried women, pessaries should never be used without much hesitation, and an explanation should always be made to the patient that they will dilate the vagina, and thereby alter the relation of parts. I mention this, for quite lately I had to interfere to prevent a rupture between a newly-married couple, the husband having entertained the belief that his wife had not led as strictly chaste a life before her marriage as she ought to have done; the fact being that she had worn a pessary for anteflexion.

Symptoms do not help us much in the diagnosis of anteversion or anteflexion, but the practised finger will at once discover it without the use of

the sound. If the aid of that useful instrument be, however, thought desirable, let it be employed with all the precautions already given.

In women who have been pregnant, misplacements of the uterus forward requiring interference must be uncommon, for I have seen very few instances. On the contrary, retroflexion and retroversion are very common, and usually, though by no means always, they give rise to an amount of distress which makes the life of the sufferer a perfect burden. These forms of misplacement are also very unusual in women who have not been pregnant, for I have very rarely found a well-marked retroflexion in a virgin, and retroversion comparatively seldom. In unmarried women both forms are met with; but if the marks of virginity are gone, and the patient has not previously worn instruments, I should always be inclined to set down a well-marked displacement backwards, especially retroflexion, as the result of an indiscretion. This apparently harsh conclusion is the result of my constantly increasing experience of the amount of abortion-mongering carried on in our large towns, and which is extending even to our rural population. The victims of this practice rarely lie in bed whilst the uterus is undergoing involution, and thus they place themselves in the most favorable circumstances for the production of retroflexion.

Speaking of my own experience, I may safely say that nine out of every ten cases both of retroversion and retroflexion are associated with subinvolution and chronic metritis, and of course the displacement is only a result of the subinvolution. In most of these cases there is both flexion and version, and the large hard uterus, with its cervix open, is like a small soda-water bottle, bent on itself and turned more or less upside down. These cases are always associated with profuse leucorrhœa and profuse and too frequent menstruation. The other causes of backward displacement are fibroid growths, hæmatocele, peri- and para-metritis, and accidents. Of the first of these, I saw a most remarkable instance some years ago with my friend Mr. Richard Freer, of Stourbridge. The uterus was really upside down, and we had to place the lady under ether before we could reach the os. When the misplacement was rectified, we found it due to a small myoma growing in the posterior wall, quite at its upper part. It was a case of pure version, the tube of the uterus not being at all bent, and this explained the extraordinary position of the os. Effusions of blood and inflammatory attacks in the uterus often leave a retroflexion or retroversion behind them, with the addition that the uterus is fixed in its anomalous position, and can be interfered with only with considerable risk. When the uterus is fixed in a malposition, no attempt to rectify it by the sound should ever be made; and pessaries, if used at all, should be used of very small size at first, and the size very gradually increased. My experience, however, is in favor of letting these cases alone. An accident, such as a violent strain, a jump, or even a blow, may seem at least to account for a misplacement of the uterus backwards; and in cases where this has been the cause, I think retroversion, without retroflexion, is the more common result. Retroversion is also often associated with early pregnancy, but only, I think, where a backward displacement has previously existed; and in order to dismiss this subject, I may briefly say that usually this displacement rectifies itself as the pregnancy advances, and if proper care be taken after the labor the pregnancy may be made to cure the displacement. Sometimes, however, the displacement causes abortion, and this may be repeated, necessitating that the patient should wear an intra-uterine stem to prevent pregnancy till the displacement is cured. In one extraordinary case which I attended with Mr. Langley Browne, of West Bromwich, retroversion of an extreme character continued till the end of pregnancy. Mr. Browne was called to her and found

unmistakable evidences of labor pains, but could not find the os. He telegraphed for me, and before I placed the patient under chloroform I was equally at a loss. The impression at first was that we had to do with a case of extra-uterine pregnancy, and the extreme thinness of the uterine walls favored this belief. The anæsthetic, however, enabled me to find the os at the top of the immensely elongated vagina, up quite on a level with the umbilicus. By inserting my finger into it, and aiding the process by my other hand outside, I was able to turn the uterus on its biparietal axis, and Mr. Browne finished the labor by turning, on account of an arm presentation.

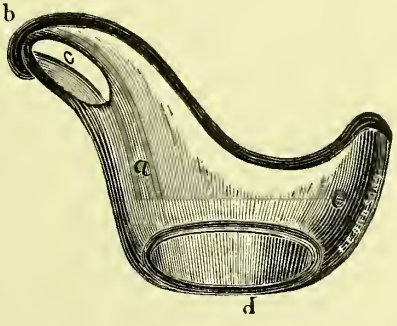
The diagnosis of retroversion is less easy than that of retroflexion, because in the latter the curve or bend of the uterus enables it to be followed in the vagina with great ease. Retroversion may, however, be always recognized by placing the forefinger of the right hand in the vagina and that of the left in the rectum. If necessary, the sound may be used, but to the skilled finger it is rarely necessary, unless there be some complication. If the uterus is mobile, the cervix, which is pointing forwards, should be pushed backwards, and the misplacement may be so far rectified in this way that the fundus may be felt above the pubis, and in this way the diagnosis may be made certain and the absence of complication verified.

The lump in the rectum which is generally supposed to be characteristic of the retroverted fundus, may be imitated by a small tumor, by a hæmatocele, by an enlarged ovary, by a knuckle of intestine containing a hard mass of fæces, or, as I have already said, the inexperienced finger may mistake a normal cervix for it. In the case of a tumor or of a prolapsed ovary, the sound may be necessary to assist in the diagnosis. I have been greatly surprised to find how very seldom intestines seem to occupy Douglas's pouch, at least so that they may be recognized, for I am certain I have not detected them more than three or four times in many thousands of examinations. Once, I believe, I mistook a piece of fæces for a small myoma in the posterior wall; but as it was gone the next time I saw the patient, the mistake was easily corrected. A prolapsed ovary is readily distinguished by the bimanual examination and by the dull sickening pain caused by pressure on it. A hæmatocele, and of course it is only when the effusion is of small size, quite behind the uterus, and outside the peritoneum, that it is likely to be confused with a retroflected fundus, may always be recognized by the three conditions, that it is more or less fixed, that when examined from the rectum the swelling fades away right and left of the tube, and that the uterus is in front of or fixed in the middle of it. The history also of a sudden attack will point in this direction. The diagnosis of hæmatocele is important, in so far that no local treatment by pessaries should be undertaken. In doubtful cases, the unfailing aid of an anæsthetic should be taken advantage of, and then I believe all difficulties will be cleared up in experienced hands.

General symptoms help us but little in the diagnosis of uterine displacements, further than to direct our attention to the necessity of a manual examination. Persistent pain in the loins, pelvis or back, painful or frequent micturition, pain on the passage of a motion, mysterious reflex symptoms or persistent sick headache for which no adequate cause can be found, should always, in a woman, direct attention to the uterus and ovaries. In unmarried women we should of course hesitate as long as possible before making a vaginal examination; but when all general treatment fails, or when the general symptoms can be explained in no other way, our hesitation should cease and the pelvic organs should be examined; for it has been in my experience most extraordinary, as I know it has been in the experience of very many others, how unexpectedly uterine disease

has been found to be the source of remote subjective symptoms and how completely they have yielded to its treatment.

As in the case of displacements of the uterus forwards, so in its diversion backwards, we find numerous instances of marked retroversion and retroflexion in which no suffering has been experienced; and where the displacement therefore demands no treatment whatever. When, however, treatment is required, its details will be found to differ in almost every case. For the replacement of the organ no kind of pessary will answer in every case. The vaginæ of women differ as much as their faces, and therefore it is that Simpson's original ring pessary will be found far more generally applicable than any other, because its form and size can be so easily and effectually altered. Three or four sizes are needful, varying in character from an inch and three-quarters to three and a half inches. The wire of which it is framed should be of copper, and so thick that it will not bend by any exertion the patient may make whilst it is in position, yet not so stiff but that it may readily be bent by the fingers of the practitioner. The joining in the wire should also be most carefully made with hard brass solder, and on no account with tin or soft solder. The reason of this is that soft solder sooner or later gives way by the galvanic action, and the sharp ends of the wire may do mischief. The wire should be covered by carefully closed soft rubber tube, and not gutta-percha, as the latter chips off when it gets old. In each case the ring must be bent according to the requirements of the patient, and placed as may be found best. Generally this will be behind the cervix, but occasionally it requires to be placed in front of it; and these details must be attended to with the utmost care, because a patient will not be relieved or cured merely by having a ring placed in her vagina, any more than a broken limb will be properly set by merely having a set of splints placed in bed with it. Some years ago I introduced rings made with watch-spring, and these I find very useful in cases where they have to be worn for some considerable time without skilled supervision, for they yield upon emergencies and readily accommodate themselves to strains. They also have the advantage that the patients can easily remove and replace them. As curative agents, however, I have not been satisfied with them, and I regret to find the simplicity of their use, aided by the free advertisement of enterprising manufacturers, have extended their use to a surprisingly absurd extent.



One of the most recent additions to our already extensive stock of pessaries is one invented by Dr. Fowler, of Youngstown, Ohio, and greatly praised by Dr. Marion Sims. It is fashioned as a handled cup, through the opening of which (*d*) the cervix passes, the displaced fundus resting on the cushion (*e*), the handle (*b*) resting either on the rectum or the pubis, as the case may be one of anteversion or anteflexion. The aperture (*c*) is for the finger of the surgeon in removing or placing the instrument. This instrument is made of three sizes, and is very useful in those cases in which it is found to fit. It has two very serious defects, however, in that it cannot be altered to each case, and that it is somewhat costly. Sometimes also I have found that it turns round into the transverse axis of the pelvis and then does more harm than good. I here represent a

modification of it which is not open to these defects, for it costs less than half what is charged for Fowler's pessary, and a few minutes' immersion in boiling water will enable the surgeon to alter it in any way he sees fit. It acts in precisely the same way as Fowler's pessary, either for anteversion or retroversion, or similarly in flexions.

In all cases where it is possible, intra-uterine stems should be avoided, for they are always sources of anxiety and sometimes of danger. But occasionally, especially in cases of acute retroflexion, it is impossible to dispense with them, and then the best form undoubtedly is the light vulcanite stem introduced by Dr. Chambers. When chronic metritis or subinvolution co-exists with the displacement, these must be at the same time appropriately treated; and a woman who has once had backward displacement and has become pregnant should be treated with an especial care after her labor, to prevent, if possible, a recurrence of the abnormality.

I have seen a few cases of latero-flexion, the result apparently of the contraction of some old effusion in the broad ligament, but in none have the symptoms demanded treatment.

In speaking of downward displacements of the uterus, I have confined myself to the use of the terms *prolapse* and *protrusion;* meaning by the former term the descent of the uterus so far that it does not appear outside, and by the latter a continuance of the descent till the cervix appears outside as partial protrusion, or till the whole organ and the structures associated with it appear outside as complete protrusion. One form of prolapse, and even of partial protrusion, I have already mentioned, where the descent is due to a hypertrophic elongation of the cervix, without the normal level of the fundus being greatly or at all interfered with.

Prolapse, or even protrusion, of the uterus, without hypertrophic elongation, may be met with at all ages, for I have seen it in very young children, and I have in my possession a preparation of an immature fœtus, given to me by my colleague Dr. Charles Warden, in which the uterus is completely protruded through the vulva. Such a displacement is always due to a relaxation or elongation of the suspensory ligaments of the uterus, and this stretching may be due to a number of different causes. In by far the greater number of instances it is due to the carelessness of women after their confinements, or even at their menstrual periods. I have, however, seen it due to the pressure of some abdominal tumor, or of a collection of ascitic fluid. Thus in the instance of a girl aged only eighteen, whose case I published in the *Lancet* of October, 1875, there was complete protrusion of the uterus and bladder, due to the pressure of an ovarian tumor; and when I removed the tumor, I was able to cure the protrusion by clamping the uterus close up to the wound.

Protrusion of the uterus is a condition comparatively rare in the better ranks of life, but enormously frequent in our hospital clienteles—facts which at once point to its chief cause; and it is most astonishing to find that some women will pass many years of their lives with their pelvic viscera completely extruded, without seeking for any assistance. Prolapse frequently gives rise to no discomfort, whilst in other cases it produces an intolerable sense of weakness and pain, rendering the patient unfit for any active duties. The diagnosis of the condition is of course absolutely simple, and the remedy easily within reach. The greater number of cases may be rendered perfectly comfortable by placing a ring pessary as if for retroflexion, or by the use of one of Simpson's shelf pessaries. These latter, however, are by no means safe instruments, unless their edges are made very thick, and carefully smoothed, as shown in the drawing; usually the edges are made too thin, and then they are apt to create an ulcerative process which may result in a fistulous opening into the bladder or

rectum, unless the patient will agree to present herself for inspection at intervals. Hospital patients constantly neglect this, and therefore they are not safe instruments for gratuitous practice. The vulcanite balls, which I have already described in speaking of cystic vaginocele, are much safer, because they cannot possibly do harm, and they generally can be retained with the assistance of a napkin. For a radical cure, Simon's operation of elytrorrhaphy is by far the best means, but it is useless to perform it on a woman likely again to become pregnant, as parturition will surely undo it. It is performed by dissecting a band of mucous membrane off the posterior wall of the vagina, from the commissure to the cervix, about an inch to an inch and a half in breadth, and uniting the edges of the long wound. I have done it frequently, and have only failed to relieve the patient in one case. For protrusion the same operation may be tried, but its results are not permanent.

There is nearly always a marked degree of subinvolution and chronic metritis associated with partial or complete protrusion; indeed, these conditions seem to be a chief cause of the displacement in a great majority of the cases. The discharge of blood is therefore very profuse, and from the irritation to which the exposed parts are subjected there is a constant condition of ulceration with its accompanying purulent discharge. The condition of unfortunate women so afflicted is truly pitiable, and deserves the most careful treatment. In private practice we do not often meet with these cases; and when we do, Simpson's shelf pessary is on the whole the best and most comfortable appliance, because there is generally something for it to rest upon, and it can be watched and removed when necessary. For hospital practice, however, either the vulcanite balls, already alluded to, or the hollow rubber rings padded with hair or wool, recently introduced by Moss, are the best instruments for retention. The ball pessaries sometimes are useless by the entire absence of support from the floor of the pelvis, and the rings generally keep up a profuse and very offensive discharge. The air-balloon is of great service for any patient intelligent enough to use it, but it is open to the further objection that it is expensive, and will last only a very short time. Of the operative measures, the best is the formation of a new floor to the pelvis by narrowing the vagina for half its length upwards, bringing the new perinæum well forwards at the outlet, a modification of Simon's elytrorrhaphy; but even this is not absolutely permanent, and will of course be undone by parturition. The best way, if the patient be married, is to temporize with the best pessary available till her climacteric has arrived, and then operate.

The uterus is said to have been found extruded as a hernia in the inguinal canal, but I have seen no such displacement.

Inversion of the uterus is an accident of labor in the majority of the instances of its occurrence, though it has been described as also occurring by the growth of a tumor at the fundus, and by its gradual extrusion dragging the uterus down with it and thus inverting it. It may be partial or complete. It comes under the notice of the surgeon only in such cases where it has been neglected or not discovered after labor, or in the exceptional method of its occurrence referred to. Formerly the uniform treatment of this condition was by amputating the displaced organ either by ligature or the ecraseur; and even in spite of the almost constant success of reduction by gentle pressure, we see now and then cases of amputation placed on record. If the inversion be of recent date, so that complete involution has not occurred, reduction will be very easy; but even if years have passed since the inversion occurred, replacement by gentle pressure should be tried and probably it will be successful. Failing that,

the organ may be amputated by the ecraseur, if the hæmorrhage be such as to demand interference.

The proposal to deal with chronic inversion of the uterus by means of continuous gentle pressure is a very old one, for we find in Boivin and Duje's book on Diseases of Women, that it was very clearly indicated, as well as the means by which it might be accomplished: "Might not pressure from below upwards be also made available for reduction of the inverted uterus? A pessary like that of the cup and ball might for this purpose be introduced into the vagina." Sir James Simpson also recommended a similar proceeding, though I cannot find any record of his having employed it. Tyler Smith used an elastic ball pessary successfully, and by this means I have succeeded in reducing an inverted uterus. More recently, however, I have used the cup pessary of Boivin and Duje's with perfect success.

The method of its employment consists of passing the cup of the largest instrument (they are figured exactly half the real size) over the inverted uterus, and exerting pressure by means of elastic threads passed through the eyelets of the stem, and secured to a waist-belt. The pressure required is such as gives no pain, or at least very little. In from twelve to twenty-four hours the cervix will be found to yield, and the fundus will pass through it. The second sized cup is then to be used, and afterwards the smallest. In this way I have reduced a uterus with hardly any pain, and with no constitutional disturbance. The instruments should be made of ivory or vulcanite.

Over and over again, an inverted and involved uterus has been tied or cut off in mistake for a polypus, sometimes with success, but generally with a fatal result. The success which has followed the use of Tyler Smith's plan, even when the inversion had existed for twelve years, as was the case in one of his successful operations, clearly indicates this as the proper treatment, and utterly precludes all idea of amputating the displaced organ. If a fibroid existed at the fundus, it would be necessary to enucleate it as a preliminary measure.

I have never seen a case of partial inversion, but it must be quite evident that there the difficulty of diagnosing the displacement from a polypus would be infinitely greater than when the inversion is complete. In the latter case, the history, the presence of the tumor in the vagina, its peculiar size and shape and the pain always caused by pressing it, and an absence of the uterus above, as evinced by the bimanual touch and the use of the sound, make the certainty of diagnosis absolute.

In partial inversion, before involution had occurred, if the finger could be passed into the cervix and round the protruding mass, the diagnosis would be easy. After involution was completed the difficulty would be very great, but if the sound could be passed for a limited distance only, all round the tumor, if the tumor itself could not be rotated, as nearly all polypi can be more or less, if the finger in the rectum and the sound in the bladder revealed a want in the position of the fundus, and finally if this absence was confirmed by bimanual touch under an anæsthetic, the diagnosis would probably be made with exactness. Even if it could not be, an experiment with the cup pessary (smallest size) would soon determine the real state of matters; for if it should be a case of inversion the pessary will replace it, and if it be a polypus it will do no harm.

Menstrual Derangements.—As a rule, menstruation begins in this country about the age of fourteen, though it may appear earlier, or be

deferred for two or even three years without inconvenience. But in the menstrual history of any patient, a marked aberration from the ordinary period of the first menstruation is to be looked upon as an indication of the tendency in one or other direction of two great classes of ovarian and uterine disease. Thus a premature appearance of menstruation, especially if associated in the after-history with a too frequent and too abundant flow, is clearly indicative of a condition of congestion of the organs which may lead to a chronic ovaritis or endometritis. On the contrary, a delayed appearance, with subsequent irregularity, infrequency and scantiness of menstruation, is suggestive of the opposite condition, a want of development of the organs.

Amenorrhœa—that is, the complete absence of anything like menstruation for a lengthened time after the usual molimenal period—is a symptom of a great many conditions, some of which are quite foreign to the purpose of this work, and need hardly be referred to here. The chief of these is a disease the intimate nature of which is quite unknown, and to which many different names have been given, but which is best known as chlorosis. I have become quite satisfied that in these cases the menstrual symptoms are an effect and in no way a cause of the general condition, which is to be easily recognized by the whitish-green color of the skin of the patient, the absence of red in the lips and mucous surfaces, and the presence of symptoms of serious systemic disturbance to be found described in all the general text-books of medicine. Amenorrhœa may also be indicative of some obstruction to the external appearances of menstruation, such as an atresia of some part of the general canal; or the condition of amenorrhœa may be protracted by impregnation having occurred before the ordinary signs of menstruation have ever become developed. Thus it will be seen that I regard amenorrhœa only as a symptom, and that I strictly limit the application of the term to such cases as those in which there has never been any external manifestation of the monthly discharge. This limitation is demanded by clinical convenience. When menstruation has once occurred, no matter how imperfectly, its very occurrence establishes a fact in the economy of the patient which gives quite a new phase to her case, and fixes a date from which most important conclusions may be drawn in after life. Menstruation does not usually proceed with perfect regularity immediately after its first appearance. It may be suppressed for a few months, appearing at the end of the interval and occurring afterwards in a normal manner. Perfectly healthy menstruation consists in a flow which occurs at intervals of from twenty-three to twenty-six days, lasting from three to five days, accompanied by various sensations of uneasiness but without positive pain, and resulting in a loss of blood which may vary greatly in amount, but which outside certain limits may be said to be abnormal. How we are to determine what is an abnormal loss cannot be laid down by strict rule, but as nearly all women wear napkins to catch the discharge, the number of these used during the menstrual period will generally be found to give some indication of any excess or insufficiency in the amount. Allowance must of course be made for the different habits of women, for some will discard a diaper when soiled to a much less extent than others will; and as it is very often a matter of the greatest importance to know definitely whether a patient is losing more than she should do or not, in any case of doubt an inspection of the soiled linen should be made. I have generally found that if a woman uses more than four or five diapers in twenty-four hours, or less than three, the discharge is abnormal. The whole number used during the period should not ex

ceed fifteen, without the suspicion being entertained that the flow is excessive; and if it does not amount to ten, it is probable that menstruation is scanty.

Amenorrhœa alone is hardly ever a justification for a vaginal examination. Menstrual suppression, on the other hand, is always a reason for considering the necessity of an examination, and for a careful outlook for other signs or symptoms which may justify it. In any young woman in whom menstruation has been completely established, and has occurred with perfect or considerable regularity, a sudden arrest of the external appearance of the process is to be held at once as an occurrence requiring the gravest attention. It ought never to be pooh-poohed with a placebo, both for the sake of the patient and for the interest of the practitioner. I have known a larger number of instances of medical men damaging their reputations in this way than in any other. The first suspicion is, of course, that the patient is pregnant; but this ought never to be even hinted at till the most positive evidence of it has been obtained, either by the discovery of the sounds of the fœtal heart or indisputable fœtal movements. The former is the only absolute sign; but sometimes, even when there was no doubt in the mind of the patient or in my own about the pregnancy, I have failed time after time to hear the fœtal heart. I have often heard it in the vagina when I have failed elsewhere, and for this exceptional method of examination I have found Dr. Syer Bristowe's globular stethoscope of great service. The greatest care must be taken to be sure that sounds of intestinal gurgling are not mistaken for the fœtal heart. This painful mistake was probably the cause of a blunder into which several practitioners fell in the case of a young girl from whom I removed an ovarian tumor, and in whom they declared there was undoubtedly a child. It was with considerable difficulty that I could persuade the aggrieved parents to forego their intention of insisting upon a legal redress for the injury which the statement had inflicted upon their daughter. Fœtal movements are very deceptive, and in all cases where there is great doubt, and especially where heavy responsibility rests with the opinion given, they should never be trusted to alone.

Menstrual suppression may also indicate the growth of an ovarian tumor, or the occurrence of a hæmatocele, and both of these may, by careless vaginal examination, be mistaken for an enlarged and pregnant uterus, so that every care should be exercised in such a case.

Dysmenorrhœa, or painful menstruation, is not always to be made the ground of local examination, especially if the pain precedes the appearance of the flow, in which case it is most probably due to ovarian causes. If, however, the symptoms resist constitutional treatment, or are so severe as to incapacitate the patient, or are of such a character as to suggest the existence of obstruction to the egress of the fluid, an examination is necessary and should be made. In married women there need hardly ever be any hesitation in suggesting the need for examination; what I have said refers chiefly to young and unmarried women, in whom, for evident reasons, an examination should not be made unless the symptoms justify its necessity, and then it should be insisted upon.

Menorrhagia, by which is meant an excessive loss of blood at intervals which have somewhat the periodicity of menstruation; or metrorrhagia, by which is meant a loss of blood which is either so continuous or so irregular as to cloud the occurrence of the monthly flow, should always be the subject of a local investigation; and any practitioner who undertakes the treatment of a case where this is a symptom without at least carefully

informing the patient of the utter uselessness of any treatment unless with a clear perception of the local conditions, seriously neglects his duty. The causes of menorrhagia or metrorrhagia are considered at length in various chapters of this book.

At the period of the appearance of menstruation, and at its decadence, special dangers await women, all of them due to their sexual functions, though some of them have only an indirect association with the pelvic organs. Thus on the accession of those feelings of vague uneasiness or positive pain to which the name *molimena* has been given, we frequently find instances in which a dormant tendency to mental disease becomes roused into action; and acute mania forms one of the risks through which many young women have to pass at the period of puberty. In these cases the greatest distress is sometimes caused by the terrible form taken by the insanity, erotomania; and I have several times seen girls so afflicted indulge in gestures and language which puzzled us to guess how the patients became acquainted with them, the girls were so young and had been so well brought up. As soon as any symptoms of sexual eccentricity display themselves in a girl at the molimenal period, she must be treated as insane; and I hold that this view is really the best and safest explanation of many cases of what looks like mere lust, and what is usually and unfortunately punished as a moral offence. It must be borne in mind, as I have already said, that in the descent of the whole scheme of creation, the function of reproduction has been the field of the keenest and most unintermitting struggle for existence; and at the time of the physiological change which enables the young animal to enter upon that dangerous battle-field, the tendency of his or her ancestry is almost sure to evince itself in one or other form; and any error in this direction is to be held as not the fault of the individual, but his or her misfortune. The true preventive consists in what I believe it to be the duty of every parent to give to every child, instruction in the nature and purport of sexual functions, how they are to be used and how easily they may be abused. If this were done, we should not only diminish sexual diseases, but we should greatly diminish sexual immoralities.

At the climacteric period of life, women are subjected to another set of risks, some of which are directly, and others only indirectly, associated with their sexual functions. The general symptoms of climacteria are often severe enough to constitute a disease, even though they may have only a subjective existence. Most women cease to menstruate between the ages of forty-five to forty-eight, though they may have the change earlier, as a result of certain conditions elsewhere described; or it may be delayed for some years by causes of an opposite description. The general symptoms which accompany the change include head-ache, nervous depression, flushes of heat and chills, irregular and sometimes profuse menstruation, pains in the back, dyspepsia, or other functional disturbance. Very few women pass the climacteric period without more or less suffering, and in some cases permanent damage is encountered. The nervous symptoms may be so severe as to result in mental derangement, and this often takes the form of incurable dementia. I have also noticed in several cases a specific form of climacteric epileptic mania, which I believe to be entirely irremediable. But perhaps the most common, and I really think the most terrible form of mental disease which is developed at the climacteric, is a tendency to the abuse of alcohol. Here let me say in defence of women, and in opposition to much clap-trap which it has been of late the fashion to write about their drinking, that after a considerable

experience of women who have given themselves up to the habit of intemperance, I have never yet had one as a patient in whom there was not some strong inducement to the indulgence. Women are always secret drinkers, in this differing greatly from men; for when a woman does give way to intemperance, she knows how much more she has to lose than a man has, and how much more misery she will bring upon others. The cause will generally to found to exist in some physical suffering, or in some mental distress, from which she seeks relief, or in a form of climacteric insanity. I have cured a drunken woman of her habit by a pessary for retroflexion. I have known many driven to the use of an alcoholic anæsthetic by the neglect or infidelity of their husbands; but by far the larger number of these unfortunates have adopted the habit late in life as a relief from their climacteric discomfort. These are cases of insanity, and it would be a wise law which would enable us to place them in seclusion till the time of their trial is over. I do not believe that women ever take to drink from the mere love of it, or from convivial indulgence, as men do.

When the inner secrets of the mind of a climacteric patient, suffering from such depression as is likely to produce intemperance, can be reached, some delusion will generally be discovered which will guide us in the treatment. I cannot here enter into this subject without trenching on the province of the alienist, but I could give many illustrations of it. I have found women believing themselves pregnant by men not their husbands; but one of the most terrible was a case in which the poor woman believed that she was pregnant by a dog. We removed her from all home associations, without putting her under restraint, carefully regulated her mental occupation, and in about twelve months the delusion left her, and she gave up her intemperate habits completely. The most essential treatment in all these cases is removal from all the former associations of the patient.

After the cessation of menstruation, and sometimes as an indication of the approaching change, many women become very stout; and as this is first brought under their notice by a change in their figure, they are often very unnecessarily alarmed by it. If menstruation has ceased, they often believe that they are pregnant; or, now that tumors are spoken of so much by the public, this dreadful vision, or that of dropsy, is suggested at once, and they appeal for surgical assistance. It is often very difficult to convince them that there is nothing but ordinary fat, and in such a case the best way is to advise a consultation of two or three practitioners, and an examination under an anæsthetic. The moral force of this proceeding is generally sufficient. The fat is always both omental and parietal, and the nature of the case is indicated by an absence of all signs of tumor and the existence of an adipose thickening all over the integument.

For the relief of nearly all the subjective symptoms of the climacteric period, I know nothing better than the use of an occasional drastic purgative, and removal from home at frequent intervals. I have seen immense relief from small bleedings, but this is a remedy not to be used indiscriminately. When objective symptoms or signs are found to depend upon definite pathological conditions, such as chronic metritis, &c., they must be treated on the principles discussed elsewhere.

Congenital absence of the uterus has already been referred to, and is generally associated with incomplete development of the vagina, the latter organ being represented only by a short cul-de-sac. This condition does not necessarily interfere with marital functions. The term "infantile uterus" is one used by Simpson to mean insufficient development of the organ, and it is very descriptive. Within the last few days I have seen a

most remarkable instance of this condition in a young lady who, for many years, has been in a condition of semi-seclusion on the ground that her sex was doubtful, and that she was either an incomplete male or a hermaphrodite. She had been examined, or at least was said to have been examined, by several practitioners, who all gave this opinion. The condition I found, however, was that the external organs were perfect, and that there was a perfectly developed vagina; but the uterus was represented by an organ no larger than it probably was at birth. Under ether, bimanual examination determined this with perfect ease; and now that the question of her sex is set at rest, the patient will assume her proper place in society. She has never menstruated, and probably never will, but she is in a perfectly nubile condition, though I do not think there is the least chance of her becoming pregnant. In such a perfect instance as this, there is of course no benefit likely to be obtained by the use of the galvanic stem; but in a case where menstruation had ever occurred, no matter how incompletely, I should give it a trial, especially if there were any nervous symptoms likely to be benefited by a more perfect establishment of the periodic flow.

Bifid uterus is merely a retention of an early phase of the development through which the organ passes, and is one of the many reversions of type of structure which prove Darwin's proposition concerning the descent of man. It is by no means an uncommon malformation, and varies in extent. Thus the most common variety is the retention of that form of the uterus which the human fœtus presents at the third month, when the tubal division is marked as far down as the internal os. In a series of transverse sections of an earlier human fœtus, one under five centimetres in length, the formation of the uterus and its tubes, and also of the vagina, will be seen taking place from the changes in Müller's ducts. The two excretory ducts of the Wolffian bodies, or Gaertner's canals, diminish in size, though always remaining large enough to be found in the adult, and Müller's ducts enlarge and turn inwards and in front of Gaertner's canals, at about the level of the last lumbar vertebra. They are then seen to unite to form one tube, then again they separate and again unite, so as to leave at last a common orifice. In a large number of animals, however, they do not form the first coalescence, so that the uterus remains permanently bifid. As a rule, in the human uterus the second separation is destroyed, so that the cavity is single in after life; but in some cases the first coalescence does not take place, so that the uterus remains bifid and the vagina is single; whilst in others the second coalescence may not be formed whilst the first is, so that the vagina is double and the uterus single. Again, there may be no coalescence at all, so that the two genital tubes remain separate till they open in the short sinus urogenitalis of the human subject, which is formed only by the labia minora, a condition which may be said to exist in the batrachians. It is a very significant fact that these malformations occur in the higher animals as well as in women.

The clinical importance of these deformities lies chiefly in the possibility of kolpostasis in one uterus, while menstruation is free from the other. Gustav Simon narrates such a case. Pregnancy may also occur in one uterus, whilst the examination of the other may lead to a suspicion of extra-uterine gestation, as has happened in my own practice. I do not know how to point out any method for the diagnosis of such cases better than by advising that the possibility of the occurrence of such an abnormality is to be always borne in mind in cases where there is room for doubt. A rigid investigation of the organs will certainly display their duplicity.

Metro-peritoneal Fistula.—Years ago Simpson drew attention to the fact that occasionally when the sound is used, even by hands accustomed to the gentle manipulation required in gynæcology, it will pass through the fundus into the peritoneal cavity without in any way injuring the patient. A great deal of scepticism has been expressed about Simpson's assertion, in private of course, and it was not until I made a series of clinical displays of the fact that it was generally admitted. An eminent German surgeon openly disputed the possibility of its occurrence, but since has had reason to admit its actual occurrence. Certainly nothing is likely to startle one more than to find a sound pass five, six, or seven inches inwards, when there was no reason to suspect that it would penetrate more than two and a half. I had often heard Simpson speak of it, but the first time I saw it the event had an almost theatrical absurdity. An eminent continental Professor of Midwifery was visiting Simpson, and we were showing him cases in Simpson's enormous private clientele. He was using the sound to replace a retroflected uterus, when he suddenly found it went inwards, and on gently pushing it up it entered to the hilt. He was greatly distressed, under the belief that the sound must have entered a pregnant uterus; but when Simpson told him that that was impossible, and that he had perforated the abdominal cavity, his distress was most painful, and we could only assure him that there was no danger by exhibiting to him the patient perfectly well three or four days afterwards. An explanation of such cases, to the effect that the sound travels along a Fallopian tube, which has been offered by Dr. Matthews Duncan, would, if correct, be really a more wonderful thing than the more simple one of the perforation of the fundus. Considering the rarity of cases of tubular dilatation, even with occlusion of the os, and the frequency of cases of the passage of the sound into the peritoneum, together with the still greater unlikelihood of the tube being placed in the axis of the uterus, and being at the same time so freely movable as to allow the perforating sound to pass in all directions within the abdomen, we can hardly accept Dr. Duncan's view even for any of the cases. But in many which have come under my own notice I have had abundant evidence that Simpson's explanation is the correct one. I have published some of these cases in the *Lancet* for the years from 1871 to 1875, where their details may be found; but the most interesting, as being the most conclusive, is a case published in the *Lancet* for May, 1872. The woman applied at the hospital for subinvolution six weeks after labor, the uterine cavity measuring six inches. After a month's treatment, it was diminished to three inches, and then it was accidentally discovered that the sound could be made to pass through the fundus at one particular spot. The woman was so thin that it could be determined with the most perfect accuracy that this spot was about midway between the cornua and somewhat towards the front. The observation was substantiated by my colleagues and a number of friends, the woman remaining under care for many months. I must have passed the sound through the fistula at least twenty times, yet always without pain or even discomfort. My explanation of the aperture is, that it was a fistulous opening, the result of a limited rupture of the uterus during labor. At the end of my report of the case, I suggested the question, "May this woman become pregnant again?" and I answered it in the belief that she might. She has had two children at the full time since, and the hole is still there, exactly as it was in May, 1872.

The fact of the occasional existence of such fistulæ, or of the perforation by the sound of a thinned uterine wall, is sometimes of immense im-

portance in diagnosis. In the *Lancet* for June, 1875, I published a case of such perforation in the presence of an ovarian tumor, the perforation having been made by one of my colleagues just as I was about to begin the operation for the removal of the tumor. Had I not been satisfied with my diagnosis, this occurrence would probably have stayed my hand; but the perfect success of the operation justified my proceeding. I found, besides the ovarian tumor, a small myoma in the fundus, behind which the sound had probably passed; but I did not stop to examine minutely for the aperture more than to satisfy myself that it was not through a Fallopian tube that the sound had passed. The patient recovered perfectly, and the sound can still be passed into her peritoneal cavity.

Tumors of the Uterus.—These growths can be discussed most conveniently by following a classification based on their anatomical relations to the uterine wall, by which they fall into the three classes of polypoid, interstitial, and subperitoneal. By a polypoid tumor we mean one which is distinctly pediculated, and presents into or through the uterine canal. By an interstitial tumor is meant one which is not pediculated, and which is either surrounded by a layer of uterine tissue or is continuous with or replaces that tissue. By subperitoneal is meant a tumor which may or may not be pediculated, which arises from and is more or less connected with the uterus on its outer aspect, is not covered by a layer of uterine tissue, but is invested by the peritoneum, which, previous to the growth of the tumor, was in association with the outer uterine surface.

A vast number of different kinds of uterine polypoid growths have been described, almost every author having found a new one; and the mere naming of the varieties mentioned in books would probably fill half a page. But only a very cursory examination of the literature of the subject is necessary to show that the great majority of the different names refer to the same thing, and that the actual varieties of polypus probably do not amount to more than four or at most five. Thus we may at once dismiss the fibrinous polypus, because it cannot be said ever to be an independent growth. It consists always of the deposit of fibrin, often colorless, but generally more or less colored by hæmatin, from some bleeding surface. That surface may be the site of a placenta, or a fragment of placenta retained; or it may be a myxomatous or cancerous growth. On these grounds I refuse to place this growth in my nosological table as a form of polypus, for it is always to be regarded as a mere sign of some other condition.

The polypi which have been described variously as cellular, glandular, mucous, channelled, cervical, &c., will always be found to present certain characters which refer their origin to the hypertrophy of a limited patch of the villous surface of the cervix. They are always of small size, red in color, bleed freely, are soft and very friable, are attached always to the cervix, and when examined by the microscope on perfectly fresh section, they possess all the characters of the villous structure. Their channels are only the inter-villous spaces or the mucous crypts, and their cells only the ordinary epithelium. The fibrous basis of the membrane is generally somewhat hypertrophied, but is never so consolidated as to make them fibrous. I have already referred to them in speaking of the cervix, so that nothing more need be said here.

By far the most common form of uterine polypus consists in an enucleation of an ordinary myoma of comparatively small size. The conditions of this enucleation are that it should not be of very large size, and that it should be either immediately under or at least in close proximity to the

mucous surface. Another, but not so essential a condition is, that it should be a single growth. The cases in which we can diagnose and remove a uterine polypus, where there are at the same time other intramural myomatous growths, are so rare that I have never met with one; whilst, on the other hand, I have removed a very large number of myomatous polypi in which there were no other growths. The process of enucleation would not be required in a tumor which was absolutely submucous in its origin, and that instances of that kind do occur is certain. But I believe that by far the larger number of myomatous polypi originate in sites where there is a distinct layer of uterine tissue between them and the mucous membrane; for such a layer can be traced over most of them from the pedicle, and I believe that the thickness of the pedicle is in proportion to the original thickness of this layer. All myomatous tumors of the uterus, without a single exception in my own experience, are distinctly separable from the surrounding tissue save at a few points, or oftener at one point only, and the line of this separation is marked by a layer of loose connective tissue. This encapsulation is the explanation of the travelling of these tumors. If a single interstitial myoma of small size is so placed that there is a much greater thickness of uterine tissue outside than there is between it and the uterine cavity, as the organ becomes hypertrophied along with the growth of the tumor, the expulsive efforts which occur constantly, but chiefly at the menstrual periods, gradually push the tumor through the thinner wall into the uterine cavity. As it is pushed downwards it gradually loses its muscular covering, and may even lose its mucous covering, the former being retained only at the upper, outer, or last protruded part of the polypus. In this way the muscular covering, when it is retained all over the growth, will be found to get thicker and thicker towards the pedicle. If two or more tumors were present together, it is easy to see that the uterine efforts to extrude one would, in all probability, be frustrated by the same efforts being, at the same time, exerted upon another or upon others; so that one could be extruded only by being placed in circumstances far more favorable than the others. This extrusion would be more likely to be encouraged towards the peritoneal surface than to the mucous canal; so that as a matter of fact, when we find a large number of myomatous growths present in the same uterus, we find them in greater part subperitoneal, because that is the direction of least resistance, and their extrusion would depend in no way upon the position of their origin, provided they began to grow at nearly the same time.

In the history of a single growth becoming polypoid, after the cavity has been reached the cervix is attacked, and at each menstrual period a process resembling labor is set up, generally on a small scale, but sometimes with a violence in the symptoms which is not excelled by that of an ordinary confinement. The agony of the expulsive pains during the birth of a polypus is sometimes really terrible, and being associated with hæmorrhage and protracted over many months, it is not surprising that many patients die under it, and that the majority of those in whom the birth of the tumor is accomplished are reduced to the last extremity of exhaustion and anæmia. Besides the excessive hæmorrhage at the menstrual periods, there is a constant flow of serum, more or less tinged with blood, which is of itself a serious cause of exhaustion. When symptoms like these are brought under our notice, an examination is of course at once demanded. If the tumor has passed through the cervix and is found in the vagina, the treatment is extremely easy, and the only precaution necessary is to be quite sure that it is a polypus and not an inverted uterus. That being

ascertained, the wire of the écraseur is to be passed carefully over the tumor on to the pedicle, and the latter divided, a proceeding which is never followed by any hæmorrhage. But it must be borne in mind that after the removal of a polypus the uterus requires to undergo involution as much as after a miscarriage, so that it is advisable to place the patient on a course of potash and ergot for a few weeks after the operation, in order to prevent excessive loss at the subsequent periods.

If, however, the cervix has not yet been dilated, the difficulties both in diagnosis and treatment are greatly increased. Without the dilatation of the mouth of the womb, diagnosis is mere guess-work. I had a case sent to me recently in which the belief of the patient and the history she gave pointed to the retention of a piece of placenta at a miscarriage which had occurred eight months before. Yet when I dilated the womb I found a tumor in the very early stage of extrusion, and which, left to itself, would unquestionably have killed her in a few months by exhaustion from hæmorrhage. When the extrusion into the cavity has been completed, so that a pedicle has been formed, the removal by the écraseur is comparatively easy and generally safe. Sometimes difficulty is experienced in removing the tumor from the uterus, and even from the vagina, on account of its size. This may be overcome by the use of short midwifery forceps; but a more elegant, safer, and expeditious practice is to seize the separated tumor by a hook or vulsellum and pare it into slices, somewhat after the fashion in which potatoes are peeled. I have had occasion to put this in practice once, and found it much easier than it seems on mere description.

If extrusion into the cavity has not been accomplished, what is to be done? The answer to this question must be decided on the merits of each particular case. There can be no doubt that opening the capsule of a uterine myoma is accompanied by considerable risk, especially if the tumor cannot be removed at once, but must be left partly to separate itself. Dr. Marion Sims is a strenuous advocate for immediate separation and removal, and this practice has been very successful in my hands. On the contrary, three cases in which I have been obliged to leave the tumor in order that its separation might be completed by the expulsive efforts of the uterus, have all died. The necessity for such an operation must always be decided by the condition of the patient. If she seems unlikely to bear the further loss of blood, and the tumor is of a size likely to pass through the canal, the capsule must be opened, and immediate enucleation and removal attempted. If the latter cannot be accomplished, then the patient must run the risk of the slower separation of the tumor; and there is every reason to hope that even this latter process may yet be made as successful as the former.

Of the pathology of these myomatous polypi I shall not speak until I discuss their position as interstitial and sub-peritoneal growths, further than to say here, what I shall give my reasons for afterwards, that all the so-called fibroid, fibrous, and hard polypi, ought to be classed under the term myomatous. Occasionally these polypi are found to be cystic, filled with clear serous fluid, as in an instance I described in the Transactions of the Pathological Society of London for 1873, and which is now in the Museum of the College of Surgeons. Of the rarer forms of polypi, I have met with myxoma and villous cancer, growing from limited areas of the inner surface of the uterus, and presenting themselves in polypoid form. These, however, are really more accidental than real forms of polypus; for it is neither the usual history of the kind of growths referred to, nor was

it the persistent history of them in the cases in which they occurred; for after the removal of the polypi the diseases returned and involved the whole thickness of the uterine wall and neighboring organs. I may be forgiven, then, if I express my belief that we should still more restrict our use of the term polypus, so that it may include only the small mucous growths in the cervix and the myomata extruded into the uterine cavity; and that such other growths as appear at first to resemble polypi should be spoken of only as polypoid forms of myxoma, epithelioma, &c., &c.

The terms fibroid, fibrous, and fibroma, as applied to uterine tumors, are, I believe, so completely erroneous that they should be banished from pathological nomenclature. I have now examined a large number of solid uterine tumors, and I have never met with one in which simple fibrous tissue played any but a very subservient part. Of the tumors which pass popularly under the terms I speak of, I venture to say that only in extremely exceptional cases would it be found, on sufficient examination, that the chief constituent of the tumor was not fusiform muscular fibre. By sufficient examination I mean something more than the cursory glance which usually suffices to convince the ordinary microscopist of the nature of a growth. One or two sections, cut from a piece of a tumor taken at random, hardened in alcohol or chromic acid, and stained by carmine, are not sufficient to display all the characters of the growth. First of all it is necessary to examine every tissue, the nature of which it is desirable to determine accurately, in a perfectly fresh condition; and to do this the sections must be cut by the freezing section-cutter. (See my paper in Humphrey and Turner's Journal of Anatomy and Physiology for May, 1875.) The very thin sections thus obtained must be then treated in a great variety of ways, in order to obtain accurate results; for only the experienced histologist knows how different the same tissue may be made to look by different treatments. The two best tests for the presence of unstriped muscular fibre are the long-continued action of dilute acetic acid, and careful staining with silver nitrate; but sometimes a hæmatoxylin process, and sometimes carmine, will best display its characteristic rod-shaped nuclei. I am never satisfied till I have examined a very large number of sections taken from different parts and in different planes of the tumor under examination; and in every solid tumor of the uterus which I have yet examined, I have found unstriped muscular fibre to be the chief constituent, even in some cases of cancerous infiltration. Of the round, lobulated, and encapsulated tumors, already spoken of as polypi, almost the sole constituent is this muscular fibre, the fibrous element being present only as a myolemma.

Some of these are of very soft consistency, and then scarcely any fibrous tissue is present; whilst it is more abundant in those which are hard. The tissue which encapsulates them is of a doubtful character, for sometimes I have been persuaded that it is really young tissue from which they are growing, whilst in other instances it seemed to be only a fibrous environment. Whatever it may be, it always distinctly marks them off from the true uterine wall in their interstitial stage, save at one or two points. At these points vessels are always to be found entering the tumor, and these vessels will be found to permeate the tumor almost straight to its centre. In one or two instances I have been able to convince myself that the arrangement of the bands of muscular fibre of which the tumors are composed, was upon a somewhat definite and concentric plan; and taken together with the relation of the blood-vessel I have described, this seemed to me suggestive that these tumors are endogenous.

Why they grow is a complete mystery, but there can be no doubt whatever that their growth is in some way associated with the peculiar periodic function of the uterus. When impregnation takes place, the uterus, under some mysterious influence which governs its vascular supply, increases the number of the muscular fibres in its walls, generally, but by no means always, in a gradual and uniform manner. I have seen cases—one I saw lately in consultation with Dr. Norris—where the uterine walls seemed to be no thicker than a towel, at the seventh and eighth months of pregnancy; yet during the last two or three weeks the walls attained their normal thickness, and the labors were quite natural. Such cases, seen when the walls are thin, are apt to be mistaken for cases of extra-uterine gestation, by reason of the distinctness with which the fœtus is felt. There can be no doubt that the mechanism by which the increase of the uterine fibres takes place is directly that of an increased blood supply, and modern physiological discoveries have shown that there is a system of paretic nerve fibres, whose stimulus induces dilatation of the walls of the arterioles. In the uterus it is likely that this special nervous system is more active than in any other organ, and that therefore even a slight accident, by throwing it out of order, would display more tangible results than would be seen elsewhere. It is quite certain that these myomatous tumors are strictly localized in their origin, and I think it likely that they grow endogenously from an excited arteriole and its branches, the change originating probably in the mere perversion of a physiological act. This would explain many facts in connection with them; as, for instance, their almost unlimited capacity for growth; their very slight vascularity, for if injected the great majority of them display a most singular deficiency of blood-vessels; the readiness with which they slough; and the arrest in their growth which generally, though not always, occurs at or soon after the menopause. I think it also explains the fact which I have repeatedly observed in subperitoneal myomata, that they increase during pregnancy, and diminish after parturition.

The great majority of these growths are interstitial, and in most cases they are multiple, and then they are most likely to travel towards the peritoneal surface of the uterus. When truly interstitial, that is when they are completely surrounded by the tissue of the uterine wall, they lead to a considerable hypertrophy of the uterus, by which a number of serious symptoms are usually induced. Of these the most important is hæmorrhage, and it often demands surgical interference.

I have already said that no case of profuse and uncontrollable uterine hæmorrhage should be treated without a local examination; and if the symptom be due to the presence of a myoma, the uterus will be found enlarged. Great assistance in the diagnosis will here be rendered by the sound, for the cavity of the uterus will be found elongated, and the tumor will be felt to resist the passage of the instrument in one direction, whilst it allows it in another; or if the sound passes straight up through the centre of the mass, it may be concluded that a number of tumors are present. No accurate notion, however, can be obtained by the sound as to the possibility of surgical relief, and it may be necessary to open the cervix in order to admit the finger. For this purpose tents may be used, but I am not at all sure that bilateral incision of the cervix is not a much safer plan. Having reached the uterine cavity, the size and relations of the tumor may be determined; and if it can be removed, there is no question that immediate enucleation, as proposed by Marion Sims, is by far the best plan. I have previously referred to it when speaking of tumors becoming

polypoid, and have only further to say that the opening in the capsule should be free, and that the various instruments recommended by Dr. Sims in his paper on the subject, in the "New York Medical Journal" for 1874, should be used vigorously, yet with caution. The risk in the operation is of course perforation of the thin uterine wall; but I think that there seems to be less risk in that than in leaving the tumor to slough out.

If the tumor cannot be removed through the genital canal, there remains the question of its removal by abdominal section, which I shall discuss by and by; but I need hardly even mention such haphazard and unsurgical proceedings as treating an interstitial myoma by perforating it with a red-hot iron.

There are certain natural endings to the growth of uterine myomata, some of which it is a matter of regret that we are unable to imitate. The most common is the arrest of the growth at the menopause, a process which I have attempted to imitate by the removal of the ovaries, but hitherto without success. It is an operation, however, which, in suitable cases, I am certain will prove a more successful plan than removal of the uterus. The suitable cases are those of women still distant from the menopause, and in whom the hæmorrhage is menorrhagic. The next most common termination of these growths by natural process is the sloughing of the tumor and an attempted extrusion. The great majority of cases in which this accident occurs die, but a few struggle through the terrible ordeal, and the tumor is completely extruded. This process is imitated in the easy but very unscientific operation of making a hole in the capsule, either by knife or cautery, and leaving the rest to nature. Another change which takes place in these tumors is the deposit of salts of lime, chiefly carbonate, in the substance of the tumor, coincident with an arrest of its growth. This can hardly therefore be looked on as a method of cure, as it generally has been considered; it is more the result of absolute death. This change generally occurs in the layers of the tumor immediately at its circumference, a fact which seems to me an additional suggestion in favor of their endogenous method of growth. Sometimes, however, the whole tumor becomes completely calcified, and such an occurrence has been over and over again described as a true osteoma. Paget long ago dispelled such an illusion, and my own observations completely substantiate his to the effect that the calcification is quite structureless.

There is still a third natural termination of myomata, and one of which I wish we could discover the method, that of their total absorption. Such a phenomenon has been described by several authors, but it is just the sort of occurrence which it is difficult to believe in till it has been seen, and as I have seen it I believe in its possibility. The case was one in which I determined the presence of a myoma as large as an orange in the posterior wall of the uterus. The patient was under observation for nearly three years, during which time she suffered from profuse menstruation. No change in the tumor took place in that period, and the removal of the tumor was discussed at intervals, the patient never, however, making up her mind definitely to undergo the risk. I dilated the cervix with tangle tents after she had been under my care about a year, and satisfied myself completely as to the nature of the case. After this the treatment was continued for nearly two years, chiefly by the bromide and ergot, but it made no change either in the amount of loss or in the tumor. She went to live on the continent for about fifteen months, chiefly in Russia, and had no treatment whatever during that time, yet when I saw her last

May every trace of the tumor had gone. She had had no illness at all referable to the uterus, of an acute kind, and had passed no substance, so that the tumor could not have been expelled, and she was quite as much astonished as I was at the unexpected improvement in her condition. Of course the objection must be entertained that perhaps the tumor was some unusual variety of hæmatocele, or other kind of tumor which we find is usually absorbed. I am positive, however, as to my diagnosis, and my view is supported by the unaltered state of the tumor for nearly three years, in spite of various kinds of treatment. The only alternative explanation at all possible is, that it has escaped into the peritoneum, and is there loose, but I do not think this likely; and knowing, as we do, that they increase and diminish with pregnancy, there is no good reason why these tumors should not occasionally disappear entirely.

The most troublesome symptom of interstitial tumors is the hæmorrhage already spoken of, and it may be either menorrhagic or metrorrhagic in character. Sometimes it may be greatly controlled by potash and ergot, but generally it resists this treatment. In women who have passed the usual time of life at which the menopause occurs, the hæmorrhage may often be arrested by intra-uterine injections of acetic acid, lead, &c.; but this is a treatment which requires cautious handling, and is quite unsuited for cases where menstruation is still going on, because of the risk of hæmatocele which accompanies it. In these latter cases everything should be done to palliate the symptoms, in order to avoid the necessity of a surgical operation, especially if the patient be near the climacteric period, for then it may be expected that the hæmorrhage will cease. Rest in bed during the flow is a most essential condition for the success of the treatment, and sometimes that alone will suffice to keep the loss within moderate limits.

Of late years the hypodermic injection of ergotin has been greatly lauded, not only as a means of arresting the hæmorrhage from uterine myomata, but for the purpose of arresting their growth and causing them to disappear. In the two latter directions it has been, in my hands, a perfect failure, but in the former in some cases it certainly has had very beneficial results. The formula for the injection is one part of chloral hydrate, six parts of ergotin, and twenty-four parts of water, sufficient of this mixture to be injected to give a dose varying from one to three grains. The use of the chloral is to make the solution keep, and for this purpose it certainly is better than anything I have tried. The injections must be used cautiously at first, as they are somewhat painful and apt to cause small abscesses; but after it is found that they can be borne, it is better to give full doses at intervals of twenty-four hours than smaller doses more frequently repeated. I must also here mention that in a few cases I have succeeded in arresting hæmorrhage from myomata by continuous injections of cold water introduced into the vagina from a pipe in connection with a water-tap, and carried on for an hour or two.

For the removal of a uterine tumor by abdominal section, very substantial reasons must be given, because such tumors have by no means the fatal tendency which ovarian tumors present; and their removal has, as yet, not been accomplished with the same successful results as have been obtained in ovariotomy. The conditions which justify the removal of such tumors are, uncontrollable hæmorrhage whilst the patient is yet many years from the climacteric, very rapid increase in size, and pressure upon abdominal or pelvic organs, of such a kind as to endanger the life of the patient or to render it no longer endurable. I have three times performed

this operation, involving the removal of the whole fundus uteri, the tumors being all purely myomatous, but in only one instance have I had a successful result. The details of the operations were not, in any important particular, different from operations for the removal of diseased ovaries, as described in another chapter. An additional and especial risk, however, is met with in this operation, which must be carefully guarded against; I refer to injury of the ureters. In all three cases I clamped the uterus below the tumor, and kept the clamp outside, using in one case the clamps of M. Koeberlè after Pean's method. My successful case made a speedy and remarkably good recovery, and is now, four years after the operation, perfectly well.

M. Pean's method of operating is worthy of especial attention, because he has had much better results than any other surgeon in the removal of abdominal tumors which were not ovarian. Like every other author, he lays especial stress on the prevention of the escape of foreign substances into the peritoneum. The chief peculiarity which marks his method is what he calls "morcellement," which consists in attacking the tumor piecemeal, dividing it into segments and preventing hæmorrhage by the preliminary adjustment of wire clamps; in this way he avoids making a large wound. Mr. Wells found that an incision over five inches long seemed to exercise a perceptible influence over the results of his ovariotomies; but of course it is impossible to tabulate how much was due to the mere wound, and how much to the complications which occasioned it. *A priori*, one would hardly think that if a wound five inches long had to be made, its extension for another two or three inches would greatly vitiate the result, though Mr. Wells's facts point in this direction.

M. Pean brings his clamps and the stump of the pedicle outside and rests them on needles passed through the stump and below the wires, and then the wound is closed in the usual way. It is difficult to see wherein the advantage of this method consists, but the fact of M. Pean's admirable success remains. My own belief is, that we shall yet get better methods by the intraperitoneal method of treating the pedicle in uterine tumors. Twice I have opened the abdomen to remove solid uterine tumors, and found that the usual relations of the peritoneum were destroyed, that the membrane passed from the posterior and lateral walls of the abdomen on to the tumor without dipping downwards, so that there was no pedicle, and that therefore the tumors were irremovable. In a third case of this kind I made an effort to remove the tumors by enucleation, but had to desist on account of the universal and uncontrollable oozing. This patient died, but those in which nothing was done beyond the exploratory incision both recovered.

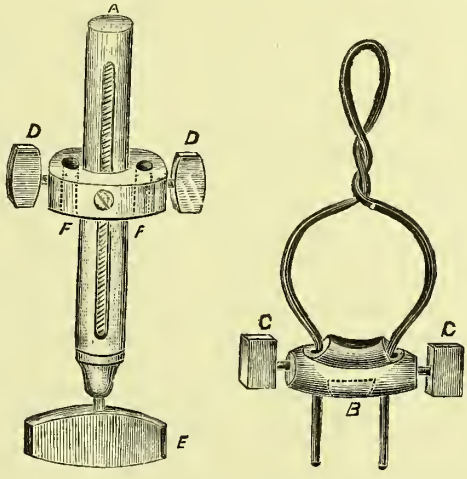
In a recent case of hysterotomy I used two of M. Pean's wire clamps, dividing a very thick pedicle between them. The patient, already very anæmic, succumbed to recurrent hæmorrhage, and on post-mortem examination it was found that one of the wires had broken by over-strain, and that the other had loosened by shrinking of the pedicle, or by having cut its way through the tissues. In any case the instrument seemed faulty in that its wires were so thin that they either broke or cut, and these are of course both dangers which it is desirable to obviate.

The object to be obtained was evidently a force of circular constriction of the pedicle by some agent which would not cut and which could be depended upon not to give way under any strain which would be likely to be applied to it. The circular method of constriction is imperative,

for that is the only way in which a thick pedicle can be arranged so that the wound can be accurately closed round it.

After a large number of experiments I selected thick copper wire (No. 12), nickeled, and completely softened by being made red-hot and allowed slowly to cool, as being the best material to work with.

For use I bend it into a loop, as seen in the right-hand figure, ready for the operation. After it has been placed round the pedicle, the collar B is run on close up to the pedicle. The handle A E is then also run on, the ends of the wires running with the holes F F, and the end A fitting into a counter-sunk hole shown by a dotted line at B. The pinch-screws D D are then closed tightly down on the wires, the screws C C being quite



loose. The handle at E is then turned slowly till the loop of wire firmly constricts the pedicle. The tumor is then removed, and if there be any bleeding, a few more turns of the handle E will secure it. When this is done, the pinch-screws C C are to be securely tightened down on the wire, and those at D D loosened. The handle will then come off, leaving the wire clamp with its collar, as seen in the right-hand figure. The ends of the wire are then to be turned slightly up, and the wound closed and dressed as usual.

I have, within the last few weeks, used this clamp in thick pedicles in three cases, with perfect success, and one of those was the pedicle of a uterine myoma.

Subperitoneal myomata, that is those which seem to be developed without a capsule of uterine tissue, but have only a peritoneal covering, do not usually grow to a large size; in my own experience they have never exceeded the size of a filbert, and are generally found single. They never present the evidences of extrusion which are found in the larger tumors. Besides myomata, there are various less common forms of uterine tumors brought occasionally under our notice. One great feature characterizes every one of them which I have examined with care, and that is that they are never capsulated, but that their tissue is directly continuous with that of the uterus, so that no point can definitely be indicated for the commencement of the adventitious growth and the cessa-

tion of the normal tissue. In all of them fusiform muscular fibre is present, though it is always, and sometimes very greatly, altered. Just in proportion to the degree of this alteration does it seem to me that the growth is more or less malignant.

The names of the different kinds of such tumors vary greatly according to the views which different authorities take of their pathological character, and into all these I think it quite unnecessary to go. Clinically, the great feature of a tumor is its tendency to return, that is its incurability; and I am quite of the belief that the encapsulated myoma is the only uterine tumor which is never malignant. Whether sarcomatous tumors of the uterus do or do not rise from a perversion of the growth of the muscular fibre I am not prepared to say, but I have seen one in which the cells were so nearly matured into an appearance and arrangement resembling normal uterine tissue, that had it been capsulated I should have said it was merely a soft myoma. I have never seen a sarcomatous tumor of the uterus removed, but if I had removed one and the patient had recovered I should have expected the disease to return, as it does when removed in other parts of the body. Sarcomata are not cancers, but they unquestionably have a malignant disposition, and the same may be said of myxomata. This latter kind of tumor I have twice seen in the uterus, in post-mortem examples. It seems to me that the growth consists in a mere vegetative and meaningless repetition of the connective tissue of the organ in an immature state, mixed up with the normal uterine tissue dislocated and disarranged. The new tissue is exactly like the canalicular tissue of the umbilical cord, as I have described it in the Proceedings of the Royal Society for 1875. Of the truly cancerous tumors I need say no more than what is already given in the chapter on diseases of the cervix. I believe they are all of epithelial origin, and that the secondary forms of scirrhous or encephaloid depend only upon the relations of the tissue infiltrated to the new and immature cell growth.

The histological differences between the malignant and the non-malignant growths seem to me clearly to indicate this conclusion, that the latter arise by an errant growth which is strictly localized, and its products are perfect and mature. On the other hand, the errant growth in the malignant diseases is not a mere excess of production, but a perversion of the process, affecting no limited area, and having always immature, imperfect, and incomplete products.

Cystic tumors of the uterus are a mystery. I have not yet met with a satisfactory theory of their production. I have seen only one case in my own practice, a polypus already referred to, and I could find no explanation of its cystic character. I have seen another, an instance of the so-called fibro-cystic disease of the uterus, which is sometimes mistaken for an ovarian tumor, but my examination of it was neither careful nor complete, as at the time my experience in practical histology was limited. I have a suspicion that the cysts may really be occluded venous sinuses; at least it is difficult to imagine any other uterine structure from which cysts with a smooth lining of epithelium could be developed towards the peritoneal surface. The tumor may be diagnosed on the general principles laid down in the chapter on ovarian tumors. As far as I can discover, it is not a disease which induces metrorrhagia, but it may prove fatal by extreme growth and the consequent interference with function, and therefore it may require removal.

Papillary cancer of the peritoneum will be found described in connec-

tion with a case of ovariotomy. I have seen it two or three times in association with ovarian tumors, and once, on post-mortem examination, in a case where it had fixed the uterus completely, and had, in the omentum, become developed into large fungous masses.

V.—BROAD LIGAMENTS.

Most of the diseases of these structures have been discussed in connection with either the uterus and ovaries, or will be when I speak of diseases of the Fallopian tubes. The uterine and ovarian veins are peculiarly liable to be the subject of thrombus when any inflammation has taken place in their neighborhood, especially in the uterus; indeed this clotting frequently occurs even without an inflammatory attack or other apparent cause. Its practical importance is this, that the clots may decompose and break up, resulting in pulmonic infarction and general pyæmia; or they may loosen, and by the formation of a pulmonary embolism result in one of the most terrible disasters which can happen to the obstetrician.

Cysts of the parovarium are discussed in connection with ovarian tumors; and of the various kind of solid tumors which occasionally occur in the broad ligaments I cannot speak, as I have seen none of them. They are said to be chiefly myxomatous and fibroid.

Pregnancy in the broad ligament, or the *sous-peritoneo-pelvienne* variety of extra-uterine gestation (Dezeimeris and Keller), is due to the rupture of the Fallopian duct in tubal pregnancy and the non-rupture of its peritoneal investment, and will be most conveniently discussed in the next chapter. In some rare instances we find the peritoneal layers so deficient that the ordinary mesenteries and ligamentous folds are completely absent. I have described several cases of congenital defects of the peritoneum ("Dublin Quarterly Journal of Medical Science" for February, 1869); but the most interesting I have met with is one I published in the "Obstetrical Journal" for October, 1876. There the peritoneal sac was wholly absent, the intestines being connected together by an abundance of extremely loose cellular tissue. In the pelvis it was absolutely impossible to identify any organ but the uterus, from the entire absence of any of the usual peritoneal limitations. Thus the bladder was torn open in removing the uterus, under the impression that it was some of the loose areolar tissue, and its nature was recognized only by the escape of urine. Two masses close to the uterus, one on either side, when cleared of the abundant connective tissue and laid open, proved to be the ovaries, and in the left there was the clot of a recent Graafian follicle, the ovum of which, if it ever were extruded, must have been arrested in the surrounding tissue. Over the right ovary the Fallopian tube seemed to course in a normal direction, but it became lost in a mass of connective tissue, and I could find no appearance of the fimbriated expansion. On the left side there was an appearance of a rudimentary tube in a fold of tissue.

The menstrual history of the patient, as ascertained by my friend Dr. Hickinbotham, in consultation with whom I saw the patient during her life, was in no way abnormal, and she was twenty-five years of age. The cause of her death was the obstruction of scybalous masses in a bunch of coils of intestine, along which they could not pass, apparently because the intestines were unable to move about.

VI.—FALLOPIAN TUBES AND FIMBRIÆ.

Such inflammatory affections as spread into the uterus are apt to pass along the tubes and produce ovarian or peritoneal mischief. In this way the inflammation of the tubes is of immense importance; and though of course it cannot be positively diagnosed, it may be suspected after the appearance of indications of the more serious extension of the disease. It may, however, have an important result, independent of the extension of the inflammation, in the form of destructive desquamation of the ciliated epithelium which lines the tubes. The function of this ciliated epithelium, as well as that of the peristaltic movements of the tubes, is evidently chiefly for the passage downwards of the ovum; but it also seems to me likely that it is to hinder the contact of the spermatozoa with the ovum until the latter has reached the cavity suited for its maturation. The statement that impregnation takes place before the ovum has reached the true uterus seems to me to be an assumption based on insufficient evidence, indeed on no evidence at all. *A priori*, we may safely say that if it is the rule, Fallopian pregnancies and the disasters which follow them ought to be much more common than they are, and I believe it to be more than likely that the real cause of this accident is the coincidence of a set of circumstances, the most important of which is the destruction or insufficiency of the ciliary movement. Inflammatory desquamation may then be a cause, and probably is not an infrequent one, of tubal pregnancy. Destruction of the tubal epithelium may also, and undoubtedly often does, cause atrophy or occlusion of the tubes, and occlusion of the apertures of the tubes may be the cause of another disease of the tubes which is described, but which I have never seen, dropsical distention. The fact which is mentioned by many authors, that both tubes are usually affected, is suggestive that tubal dropsy is generally the result of inflammatory action. They seldom reach large size, and the majority of the cases, where they are described as having reached such a size as to rival and demand the treatment of ovarian tumors, are open to the suspicion of inaccurate description. There is, however, one case given by Dr. Peaslee in his book on ovarian tumors, about which there can be no doubt; it contained eighteen pounds of fluid, and would have been removed if the patient had recovered from the tapping. I do not know how they could be diagnosed from ovarian cysts, and I do not think that the differential diagnosis, previous to the operation, would be very important.

I have recently operated upon a case of retention of menstrual fluid in the Fallopian tube, which I mistook for an ovarian tumor, the details of which are of sufficient interest to give at length.

Miss M., aged 38, was sent to me in the beginning of 1877 by my friend Mr. Alfred Freer of Stourbridge. In November, 1876, she had an ill-defined illness, during which she had obscure pelvic pains accompanied by fever. Previously to this illness, she had been in good health and had menstruated regularly. After it, she had severe pain during the whole period of menstruation, and she gradually increased in size until Mr. Freer discovered a pelvic tumor in February last. I found the tumor to be pear-shaped, quite movable, attached to the uterus at the left cornu, evidently unilocular, and about the size of an infant's head. I diagnosed it as a cyst of the parovarium, and advised that it should be tapped after it had increased in size sufficiently to warrant interference. She returned to me in May, with the tumor increased so as to be felt above the umbilicus. I advised her to come again in a month. She came, however, before the expiry of that period, on account of a sudden accession of serious symptoms; and when I saw her on June 20th, there could be no doubt she was suffering from peritonitis. Her pulse was 130; the temperature was 38.4 deg. C. (101.12 deg. Fahr.), and rose to 39.6 deg. C. (103.28 deg. Fahr.) in the evening; and there was excessive pain all over the abdomen, with considerable flatulent distention. I administered opium freely, and applied counter-irritation over the epigastrium.

On the morning of the 21st, she was easier, but the temperature and pulse had not fallen. I therefore had her placed under the influence of ether by Dr. A. H. Carter, and proceeded to open the abdomen, assisted by Mr. Priestley Smith. The tissues of the abdominal walls were extremely vascular, and it was necessary to use a large number of ligatures to arrest the bleeding. The peritoneum was found to be intimately adherent to the tumor; and, as soon as the latter had been laid bare for a short distance, it became evident that it was not an ovarian tumor, but presented the red muscular appearance of the uterus. Passing the fore-finger of my left hand down as deeply as I could in front of the tumor, with that of my right hand in the vagina, I made out distinctly enough that my original conception of the relations of the tumor to the uterus were perfectly correct. Under the suspicion that it might be a tubal pregnancy, I did not separate the tumor further, as I had not opened the peritoneal cavity, but cautiously opened the cyst in the middle line by means of a knife. As soon as I had reached its inner coat, I passed my small trocar in and evacuated about six quarts of thick dark brown fluid, having the peculiar smell of menstrual fluid. After the cyst was emptied, I passed my finger through the hole made by the trocar; and to my amazement, I found that the cyst had contracted; and as I kept my finger in the cavity, I distinctly felt it contracting round and grasping my finger. Passing the finger of the other hand into the vagina, I made out that what I had opened was, beyond doubt, the left Fallopian tube, and that I must have opened it close to its fimbriated extremity. I could find no canal leading into the uterus, and did not deem it advisable to make one. I washed out the cavity freely with weak carbolic lotion, by reversing the syphon action of my trocar. The wound was closed by four deep sutures, one of which was so arranged as to fasten in a loop of wire drainage-tube; but before this was done, I acted on a hint from Mr. Priestley Smith and snipped off a piece of the cyst-wall for microscopic examination. This fragment proved to be composed of an abundance of unstriped

muscular fibre, conclusively supporting the view that this singular tumor was a distended Fallopian tube. After the operation, I treated her exactly like a case of ovariotomy. Her temperature fell slowly. The wound suppurated freely, and shreds of what was undoubtedly mucous membrane came away with the discharge in large quantity. The drainage-tube was removed on the twenty-first day, and its track continued to discharge till the beginning of August. It then healed, and she is now (October 18, 1877) in perfect health, save that she has occasional pain in the wound. She has never menstruated since the operation.

From the fortunate issue of this case much is left to speculation, but of the nature of the tumor there is no doubt. As to its origin, it seems to me that it may be accounted for by the supposition that the illness from which all her symptoms dated was a localized salpingitis, which resulted in the closure of the two ends of the tube. The peritonitis, which she undoubtedly had when I operated on her, I suggest was due to a threatening rupture of the tube, and possibly a slight escape of its contents. If this be so, it is evident that it was only the accident of my determination to act promptly which saved the patient's life.

Simpson relates a case of simple hypertrophy of the muscular coat of the walls of the tubes. Various authors also mention tumors as having been found in their substance, but the majority of these cases are not described with sufficient minuteness of anatomical detail to enable us to accept them implicitly. Myomata of small size, as we might expect from the structure of the tubes, have been repeatedly found, and about their occurrence there can be no doubt. Cancer and tubercle extend into the tubes from the uterus; but we may dismiss all these conditions by saying that their diagnosis is impossible, and that it would be of little importance if it could be made.

The fimbriated expansions of the tubes are often found glued on to the ovary by inflammatory adhesion, especially in prostitutes, a condition no doubt due to gonorrhœal inflammation. The organ of Rosenmüller, a small cyst which remains from the ducts of the Wolffian body, is a curious feature of this part of the tube. I believe that sometimes it undergoes cystic enlargement, and should be treated as an ovarian tumor. In one of my recent ovariotomies I found it to be about four or five times its usual size, and I removed it. Occasionally one or even both tubes are absent. When one only is present, the condition is generally that only one Mullerian duct has been developed, so that there is only half the uterus, although the remaining half might perfectly well fulfil the function of the whole.

I have deferred all discussion of the varieties of extra-uterine gestation till now, in order that I might more clearly state some new views of its pathology which I believe will tend greatly to simplify this somewhat confused subject. These views I have already advanced in some communications to the Obstetrical Society of London, and I am pleased to find that they have been favorably received, and to a certain extent

adopted, by the most recent author on the subject, Dr. J. S. Parry, of Philadelphia. in his admirable work on "Extra-uterine Gestation." *

Until my views were published, every author accepted without hesitation the involved classification of Dezeimeris, which includes ten distinct forms. It was after I had met with a case of his second variety that of subperitoneo-pelvic (*sous-peritoneo-pelvienne*) pregnancy, had operated on it unsuccessfully and carefully dissected the parts, that I tabulated a mass of facts from the experience of others and compared them with my own dissections. By this comparison I was driven to the conclusion, that the idea that an ovum could be impregnated in the ovary and then pass, not through the Fallopian tube, but into the peritoneal cavity, and then out through the membrane into the tissue of the broad ligament, was alike improbable and far-fetched. It was much more likely, and the dissection in my case made me certain, that this exceptional form arises merely from the rupture of the tube in an ordinary tubal pregnancy, the wall giving way at the lower part and allowing the ovum to extrude into the connective tissue between the two layers of the broad ligament. This conviction led me still further. It made me examine other cases of which I had the preparations, or which I met with in practice subsequently, with great care, and I became convinced that in every instance the pregnancy was tubal originally, and that the acquired relations of the ovum depended entirely on the accidents of the direction and extent of the rupture of its envelopes.

I have already stated that I do not believe that impregnation takes place in the tubes save under exceptional circumstances, and when it does occur the probabilities are great that the fertilized ovum will there contract the adhesions which it ought to have in the uterus. When this misfortune does occur, the tube expands to a certain limit, that limit being reached between the second and third months of pregnancy. In the vast majority of cases, that rupture is fatal, and I am sure that there is no experienced gynæcologist who has not seen at least several instances of it. I myself have seen about ten post-mortem examinations of women who have died from ruptured tubes. In not a single instance which I have seen, nor in any of which I have found record, has the pregnancy been anywhere but in the tube. None of the cases of so-called ovarian pregnancy will stand the test of criticism. The cause of death in these cases of tubal rupture is invariably hæmorrhage, and the source of hæmorrhage is the enlarged maternal vessels at the side of the placenta. Unfortunately, it is just here that the rupture nearly always occurs, because the tissue is thinner, more vascular, and more easily torn than elsewhere. These facts I was able abundantly to prove in a case which I attended with my friend Mr. Hall-Wright, in which I removed the parts *en masse*, and succeeded in injecting them perfectly. Occasionally this rupture takes place without hæmorrhage, or at least without fatal hæmorrhage, and the patients survive the accident. In what per-centage this fortunate issue occurs we do not yet know, but it is probably not large. By the rupture the ovum is extruded into the peritoneal cavity or between the layers of the broad ligament, the latter being an exceptional and a very favorable occurrence, because the patient is not likely to die of the hæmorrhage. If the extrusion takes place into the abdominal cavity, the membranes may either remain entire and be developed with the fœtus, or they may rupture, and

* Since this was written, I have been grieved to learn that Dr. Parry has died. His book is at once a display of scholarly criticism and surgical ability.

the fœtus will then float loose in the cavity of the abdomen. Meanwhile the placenta retains its old attachment to the inner surface of the tube, which becomes everted, and it likewise acquires new attachments, as it grows, to the front of the rectum, ovaries, various parts of the peritoneal surface, and even to the small intestines. Wherever it may attach itself, it displays a marvellous power of sending villi into the structures, and inducing an enormous enlargement of the vessels in the neighborhood. These enlarged vessels, as I have seen on injection, appear more like sinuses than ordinary vessels. Their walls are very thin and have no distinct muscular layer, a fact which at once explains the disastrous results which have always followed attempts to remove the placenta in operations for extra-uterine gestation, the hæmorrhage being quite uncontrollable. It also explains the profuse hæmorrhage which follows a comparatively insignificant rupture of an organ not usually very vascular. The position in the tube at which the adhesion of the impregnated ovum takes place is not a matter of pathological importance, though clinically it greatly affects the results. Upon it Dezeimeris bases several of his other varieties, as the interstitial and tubo-ovarian. That a pregnancy may originate in the fimbriated expansion of the tube, and by its development maintain the relation of the tube and the ovary in permanency, is of course possible, but I must say I am sceptical about all the cases of it I have met with on record. If the ovum is arrested in that part of the tube which runs through uterine tissue, the result of fatal rupture is made less likely, but the pathological relations of the case are in no way altered. It is certainly not an *interstitial* pregnancy, though I offer no objection to it being described as utero-tubal.

It will be seen, therefore, that I maintain that every case of extra-uterine pregnancy is tubal in its origin, and that it may become intra-peritoneal or extra-peritoneal just as the tube happens to burst. The intra-peritoneal termination is beyond all question the more common and more fatal; whilst the extra-peritoneal development of the ovum is very rare, less fatal, and, what is of more consequence, far more amenable to treatment.

The diagnosis of extra-uterine gestation in its early stage is surrounded with difficulties, and we are seldom called upon to consider it until all hope of successful interference is over. I refer of course to the class of cases which we see at the time of the tubal rupture, and which I have discussed at some length under the head of intra-peritoneal hæmatocele.

Of the cases which survive this first and greatest risk I have now to speak. Usually we do not see them until some months after the time of their expected confinement, and after the child has died. In very rare instances our assistance is asked before this period, and in these the utmost care must be exercised before the diagnosis is acted upon. Of course, if the child is found loose in the abdomen and moving about, the diagnosisis as simple as that of a fractured leg; and the mere division of the abdominal walls will end the displacement. Only one such lucky case is as yet, however, on record, that which recently has been published by Mr. Jessop, of Leeds.

But suppose that the child is still enveloped in a sac of some kind, and alive, how can we determine that it is not in the uterus? I confess that short of introducing the sound or the finger into the cavity, I know of no means of certain diagnosis, and that proceeding can be justified only by urgent symptoms. Since I have written upon this subject, I have repeatedly been called to cases where, for some reason or other, extra-uterine

pregnancy with a living child was suspected, but in not a single instance did the result justify the suspicion, and my invariable advice to wait for symptoms always resulted in our waiting for ordinary labor. In one case, already referred to, in the practice of Mr. Langley Browne, of West Bromwich, we found a very thin uterus extremely retroverted. In the others, the conditions were those of extremely thin walls, with some kind of displacement, as latero-flexion or retro-flexion, and in these patience always solved the doubts. If I met with a case where any urgent symptoms existed, I should not hesitate to use the sound or insert a tent if necessary; for the worst that could happen, in the event of mistake, would be a premature labor.

The other conditions with which extra-uterine pregnancy may be confused, before the death of the child, are, displacement of the normally pregnant uterus during the early months of pregnancy, complicated with fibro-myoma or cystic disease of the uterus, and, more rarely, pregnancy of one-half of a double uterus. In a case which I saw with the late Mr. Ross, of Wakefield, I diagnosed either extra-uterine gestation or a double uterus with pregnancy of one side, and it turned out to be the latter. Frequently we have considerable lateral displacement of a normally pregnant uterus, especially in unmarried women, sent to the specialist as something very different from what they really are. Mr. Spencer Wells has told me recently that he has had two cases of this kind sent to him as extra-uterine pregnancies.

But it is in cases seen after the death of the child, or at least when the time of the expected confinement has passed so long that if there is a child it is sure to be dead, that our most serious difficulties in diagnosis are met with.

The first point to consider is the history given by the patient of her supposed pregnancy, and the events which occurred at and after the time of her expected delivery. It is somewhat remarkable, and I think it is in favor of the views of the pathology of tubal pregnancy which I have advanced, that the majority of the instances of this abnormality occur in women who have not borne children previously, or in those who have had no children for many years. This point in the history of the patient is therefore always noteworthy. The other matters requiring careful consideration are the sudden arrest of the menses, the gradual increase in size, the occurrence of symptoms of labor at or about the end of the ninth month, *and the subsequent diminution in size.* Of all those points, the last is the only one having the importance of a sign; but it must always be borne in mind that no history, however complete, is of sufficient weight to establish a diagnosis unless there be some distinct physical signs in support of it. This I lay down as a rule based upon a remarkable experience, which I published in detail in the Transactions of the Obstetrical Society of London for 1874. In this case I had diagnosed double ovarian tumor, but was completely misled by a subsequent history which the patient volunteered. This was to the effect that just three years before she had believed herself pregnant, because her menstruation had ceased for eight months, her abdomen had slowly enlarged and so had also her breasts She was also quite sure that she had often felt movements, and indeed had all the feelings that she had experienced in each of her seven pregnancies. One day when walking in the street she was seized by pains, exactly like labor pains, and these lasted for four hours. At these pains she felt no surprise, fully believing that she was in labor. She felt as if a child was about to pass from her, and was aware of the "swelling pressing down-

wards." She afterwards felt this "pass back into the belly," the pains ceased, and her size remaining unaltered. At this false labor there was no discharge. Up to the time when I first saw her she is quite certain no diminution of her size had ever occurred, and that there had been very little increase, if any.

The physical signs of the case were those of multilocular disease of both ovaries, and on them I need not dwell. I found it was so when I operated, and the operation was successful. The lesson of the case is the blunder, and the moral is that we should place very little confidence in the statements of patients if they are not in harmony with physical signs. I must plead this in extenuation, that I never saw a woman further removed from any taint of hysteria, and, being an illiterate woman, there could have been no cramming up of symptoms from books. The strongest point in her story was the arrest of menstruation for eight months, and I have had corroboration of her statement on this point. Paul Dubois states that he has never known the menses arrested by a cystic-ovarian tumor, but I have seen it repeatedly since this case.

The weak points in the story were those I did not attach sufficient weight to, and they were those alone on which we ought to place any reliance whatever. They are, that she had no "show" during the false labor, and that her size did not diminish after it. Having now almost exhausted, I believe, the literature of the subject,I am satisfied that these two circumstances are invariable in extra-uterine gestation which has gone past the period. The first is due to the general excitement and congestion of the organs involved, specially to the enlargement of the uterus, which is always present to some extent, and the second to the absorption of the liquor amnii after the death of the child. The complete arrest of menstruation during the period corresponding to normal pregnancy is far from being a constant condition. But even though it were, like its accompanying signs, such as enlargement of the breasts, darkening of the areolæ, increase of Montgomery's tubercles, malaise, vomiting, &c., it would help us to do little more than suspect a pregnancy. Sometimes there is metrorrhagia, due to the large size and empty condition of the uterus, a symptom which would incline us to the diagnosis of uterine myoma. After the death of the child, auscultatory signs cannot of course be made available, though in one of my cases, where the child was clearly dead, the placental sound was heard at my first visit, but had disappeared entirely at my second, ten hours afterwards, a set of signs which tended to confirm my diagnosis.

The invariable condition of the uterus in extra-uterine pregnancy, whether before or after the death of the child, is that it is intimately associated with the tumor, generally in front of it, movable to a limited extent, always enlarged before the death of the child, and remaining so afterwards if the placenta be attached, as it generally is, to the posterior surface of the fundus. The most important point is that the cervix is always quite open, in my cases almost admitting the finger. Under such circumstances, if a fœtal heart is audible, the case is clear. If not, then the character of the tumor must be taken carefully into account. If the case is seen soon after the death of the child, the tumor will be soft, more or less obscure ballottement will be felt in it, and possibly a part of the child may be made out by rectal, vaginal, or supra-pelvic examination. It is at this stage that the difficulty between extra-uterine gestation and hæmatocele will occur. Hæmatoceles are not all formed quite suddenly. I have seen several cases where a monthly addition was made to the effused blood.

In one such case, during the formation of a large hæmatocele, menstruation was entirely suspended, or rather its external indications were. The tumor subsequently suppurated and discharged through the rectum, and for a while it really was a grave question to decide whether it was a suppurating hæmatocele or the suppurating cyst of an extra-uterine pregnancy. I made an exploratory incision into it from the vagina, and satisfied myself that the former alternation was the correct one, and it is now in process of cure. Periodically increasing retro-uterine hæmatocele may easily be mistaken for extra-uterine pregnancy in the later stages, and *vice versâ*.

After the absorption of the liquor amnii, the character of the tumor in extra-uterine pregnancy alters very much. The uterus may become smaller and more mobile, and parts of the child may be felt, especially in the rectum, such a sign at once pointing out the nature of the case. This will be particularly evident in the instances of the extra-peritoneal variety. These prominences, and likewise the "bosselures," or knobs of the hands and feet, which are often felt above the pelvis, may be closely imitated by the small nut-like cysts of small ovarian tumors, and especially by the hard irregularities of dermoid cysts. These resemblances existed in the case I have narrated above to a considerable extent, but to a very much more marked degree in another patient, where I removed both ovaries, one dermoid, but where the resemblances, fortunately, did not lead me astray. If the cyst be packed down in the pelvis, the deception may be great, and nothing but exploratory puncture by the aspirator can give satisfactory evidence.* In such cases the history can be only slightly relied upon, save for the two points of which I have spoken.

Slow-growing cancer of an ovary, or in the neighborhood of the uterus, especially behind it, might be difficult to diagnose by physical signs from extra-uterine pregnancy of long standing, but the history would here greatly help us. The increase would probably be steady, and if a rapid accession to the growth took place, a temperature chart would settle the difficulty; for the only condition which could induce rapid increase of the cyst of an extra-uterine pregnancy is suppuration, and this would tell its story on the chart in lines that could not be mistaken. Anything else might safely be set down as cancer. Fibro-cystic disease of the uterus could be determined as a tumor of the uterus. Phantom pregnancy can always be dispelled by an anæsthetic.

After the diagnosis of a case of extra-uterine pregnancy has been satisfactorily determined, the question arises, What is to be done with it? If the child is still alive, and near the full term, I believe it to be our duty to operate. If the child is dead, the propriety of operating seems to me quite evident, though it has been disputed by so eminent an authority as Mr. Jonathan Hutchinson. Of course no strict rule can be laid down, and each case must be decided on its own merits; but the records of surgery are so full of instances of the risks which such cases have to run when suppuration of the sac occurs, as it almost always does some time or other, that I think we are in most instances justified in operating. Moreover, the surgical principles on which the operation is to be conducted are now so well established, and its results are so good, that the opponents of the operation seem to me to be in a very illogical position if they still continue

* The use of the aspirator in such cases is not, however, free from risk, as I have seen one fatal result from it, not in my own practice, and my colleague Mr. Ross Jordan very nearly had another.

to advocate certain other surgical proceedings of which the results are notoriously bad. Whether the child be dead or not, the steps of the operation do not vary, and the only condition which would modify my procedure would be a certainty that the fœtus had been developed outside the peritoneum, in the layers of the broad ligament. There can, however, be no certainty of this until after an exploratory incision in the median line of the anterior abdominal wall has been made, so that we may say that in every case abdominal section is the first step, and here the same strict precautions must be observed as in ovariotomy.

After the peritoneum has been opened, a careful inspection of the relations of the ovum must be made, for the further steps of the operation will differ materially according to the nature of these relations. If the child is loose in the abdomen it merely requires careful removal, careful avoidance of the placenta and the closure of the wound in the abdomen save at the lower part, through which the umbilical cord must be drawn, and which must be kept open for the passage of the placental débris after it has separated. If the fœtus is found in a sac which is not covered by peritoneum, that is, which is not formed by the folds of the broad ligament, the sac must be carefully opened in the middle line, emptied and cleaned out as well as possible, and then its edges must be stitched round to the edges of the wound in the abdominal wall, so as to close the peritoneal cavity as well as possible. The lower part of the wound, communicating with the sac only, must as before be left open, and through it the cord must be brought and the placental débris must pass. I have had one successful case of this kind, and I greatly assisted the recovery by washing the sac out daily with a solution of permanganate of potash, and by having a syphon drainage-tube placed deeply in the sac. The case is recorded in detail in the Transactions of the Royal Medico-Chirurgical Society for 1873. If, however, the sac be found to be covered by peritoneum, that is, if the case is one of the extra-peritoneal variety, I believe that a different method should be followed if possible. In such a case the peritoneum will be found lifted up from its usual relations, so that it runs on to the walls at a much higher level than is usual. In this way an exit for the fœtus by way of the vagina is possible, subject to certain conditions, which are that the placenta is not to be cut through, and that the passages must be large enough to allow the child to pass. In a case which I operated on by removing the fœtus through an incision from the vagina, behind the uterus, everything was favorable, but unfortunately in ignorance I removed the placenta, and the result was fatal. If these conditions are not possible, then the fœtus must be removed from above, and the sac must be treated as already described.

The principles of the operation are briefly these :—Remove the fœtus by the vagina if it can be done without rupturing the peritoneum; if that cannot be done, remove it by the abdominal section, closing the peritoneum if possible, but keeping the sac open so as to allow the placenta to come away by necrosis ; the placenta must not be interfered with at the time of the operation under any circumstances.

VII.—OVARIES.

Before discussing the pathology of the ovary, it is necessary that some account should be given of the anatomy and physiology of the gland; for in proportion as our knowledge of normal processes has grown, the processes of disease have come nearer to our understanding. For interest, there is perhaps no gland in the body which surpasses the ovary; for, though it may be of comparatively little importance to the life of the individual, yet it and its functions may well be said to be the pivot on which our race depends. Even in the individual, though life may be endangered only in a certain class of ovarian diseases, yet the frequency of, and the discomfort attending, all the others, are enough to exalt the gland into a structure of extreme importance.

The human ovary makes its appearance as a blastema on the Wolffian body about the seventh week of intra-uterine life, this early part of its existence being absolutely identical with that of the testicle;* and, though throughout its after history it has many differences from the male gland, yet it has so many resemblances to it, in anatomical structure, physiological purpose, and pathological change, that we are perfectly justified in going back to the ancient notion that it is the "testis muliebris," differing in its process of development from the testicle by undergoing fewer changes in growth and position; it displays what the other sexual organs also show, that the development of the male organs is an advance to a higher process than is seen in those of the female. It has its gubernaculum, though its function is limited; an excretory duct, differing from that of the male in being only occasionally attached to the gland; and a peritoneal investment, practically the same, though differing in detail from that of the testicle. One distinguished writer has further drawn a difference between these two glands in that "the developing cells of the ovary are plastic or endermic, while the spermatic cells of the testis are epidermic." This view has really no sound meaning; for, seeing that the glands are originally identical, that they both carry on their functions by the formation and shedding of epithelium, and that it is only in these processes that they differ, it is impossible to give to them any difference in function. They are closely analogous even in their diseases, as we shall see; for, even in their malignant affections, the two great classes of cancer and cystic degeneration are conversely arranged, as might have been expected from the difference in the physiological processes. Thus cancer of the testicle is common, for the epithelial proliferation of that gland is rapid, and cystic degeneration is conversely rare; cystic degeneration in the ovary, on the other hand, is common, because the epithelial growth of the gland is one of slow cyst-formation, and cancer is correspondingly unusual.

In its development, the ovary becomes enclosed in a fold of peritoneum, known as the broad ligament of the uterus. Recent German writers, especially Waldeyer and Leopold, have asserted that, on the posterior surface of the ovary, the peritoneum does not exist. If so, it has become incorporated with the underlying coat, the tunica albuginea of after-life, for it must have that covering derived during its developmental transi-

* Some recent observations of Waldeyer seem to limit this period of identity, but confirmation of his views is needed.

tions. A further analogy between the testicle and ovary has been asserted by Pflüger, that it has originally a tubular structure, and there are facts in comparative anatomy which support this view.

The ovaries at birth occupy the same relative anatomical position as they maintain in health throughout life; and they have, further, their peculiar physiological function, which they also continue to exercise, though its activity varies greatly at different stages of life. They are situated on a level with the inlet of the true pelvis, behind the Fallopian tubes and round ligaments. The left ovary is in front of the rectum, and the right in relation to a coil of small intestine which may occupy Douglas's pouch. They are outside the peritoneum really, that membrane, or its remaining epithelium, being ruptured at the escape of every ovum, and they are situated between the folds of the membrane, one on each side of the uterus, their posterior surfaces standing out beyond the plane of the broad ligament. They are attached to the uterus by a ligament of contractile tissue derived from the uterus, and termed the ovarian ligament, and they are supplied by blood-vessels and nerves between the layers of the broad ligament, the blood-vessels corresponding in origin and distribution to the blood-vessels of the testis—the spermatic; and the nerves are derived chiefly from the renal plexuses of the sympathetic. The size of the ovaries varies with the different periods of life, and, to a less extent, so does their distance from the uterus. Henning's table of measurements is given below, the chiefly noteworthy fact given there being that the ovary is largest in the first six weeks after parturition. This may have been due to some pathological condition in those examined; but in connection with this it is curious to note the statements of horse-breeders, that a mare is more readily impregnated soon after the birth of a foal than at any other time.

Henning's Table of the Size and Position of the Ovaries at different Periods of Life and in various Social Conditions, in Centimètres.

		Childhood.	Virgins.	Unchaste.	Married.	Multipara.	Puerperal.	Widows.	Divorced.	Menopause.	Old Age.
Length of the ovary	Right..	1.3 to 3.2	3.8	3.4	3.0	2.5	4.4	3.5	3.5	3.1	2.9
	Left...		3.7	3.8	2.8	2.4	5.5	3.2	3.1	2.5	2.7
Breadth " "	Right..	0.2 to 1.4	1.9	1.8	1.7	1.2	1.3	1.6	1.4	1.5	1.1
	Left...		1.5	1.7	1.5	1.2	1.4	1.7	1.4	1.4	1.0
Thickness " "	Right..	0.2 to 0.6	1.0	0.9	1.0	0.8	0.8	0.8	0.9	0.8	0.8
	Left...		1.0	0.9	0.9	1.1	0.9	0.8	1.0	0.8	0.9
Distance from the uterus.....	Right..	1.0 to 4.0	3.4	4.4	4.7	5.5	8.0	3.8	4.0	4.0	4.0
	Left...	1.2 to 3.7	3.3	4.5	4.7	5.0	7.0	4.2	4.2	3.7	4.5
No. of cicatrices...	Right..	0	6	14	21	22	8	24	17	15	14
	Left...	0	9	13	21	21	8	26	18	24	11

Underneath the peritoneal covering of the ovary is the fibrous capsule, the tunica propria or albuginea, composed of ordinary fibrous connective tissue, and sending trabeculæ in all directions into the interior of the gland. Beneath this tunic is the "couche ovigène" of Sappey, which seems, however, to be only a layer of more active or more mature cells of the same kind as are found throughout the gland. These cells undergo a peculiar growth, enlarging, coming to the surface, and rupturing either

under the influence of, or simultaneously with, menstrual excitement, when their contents are usually discharged into the uterus by the gland-duct; or this happens independently of such influence, when the contents are lost in the peritoneal cavity.

This peculiar cell-growth of the ovaries results in the formation of what are known as Graafian vesicles or the ovisacs of Martin Barry, and, although certain and specific names have been given to the different results of the process, it differs really only in degree from what takes place in any other epithelial gland. The Graafian vesicle is but a cell, the product of a gland formed, as all glands are, of basement-membrane, blood-vessels, and epithelium. The cell bursts and discharges its nucleus, as other cells are seen to do, but that nucleus has specific powers, and goes through specific processes under certain circumstances, differing in this from all other cells. The gland, therefore, and its cells, having more highly developed and complex functions to fulfil than any other gland, is more peculiarly apt to suffer from disturbance; and, these special functions being in action during part only of the life of the individual, we find ovarian disease chiefly distributed in that time. The periods of development and decay of these functions are also special times for ovarian troubles.

The cell-growth of the ovary is not, however, confined to the time of life between puberty and the climacteric change, during which the specific powers of the cell-nucleus are in existence; for Dr. Charles Ritchie has abundantly proved that the ovaries of newly-born infants and children are occupied, sometimes numerously, by Graafian vesicles or ovisacs, which are highly vascular as early as the sixth year, and which vary in size from the bulk of a coriander-seed to that of a small raisin in the fourteenth year, at which time they are filled with their usual transparent granular fluid, and their contained ova can be detected. The Graafian vesicles contained in the ovaries prior to menstruation are found as they also are in every other period of life, in continual progression towards the circumference of the gland, which they penetrate, and discharge themselves by openings in the peritoneal coat; the occurrence of the catamenial signs being thus not indispensable to their rupture. The ovisacs of a healthy menstruating woman are generally larger and more vascular than they are previously to puberty, and in their rupture there is a greater lesion of the peritoneum and a greater discharge of blood in the ruptured sac. The occurrence of pregnancy diminishes the activity of this ovarian cell-growth to something approaching its premoliminal state, and so also do certain diseases, which have a wasting influence on the system, notably tubercular disease of the lungs and cancer. Lactation diminishes the activity of the cell-growth to a less extent. The cessation of the menses at the climacteric period, though it diminishes the activity of the cell-growth at once to a marked extent, never extinguishes it; for the development and extrusion of immature Graafian follicles ceases only with life itself. They are to be found of some size even fifteen or twenty years after the cessation of menstruation. In the early and late extrusion of immature cells, the hæmorrhage accompanying the process is either much less than it is during the period of greatest glandular activity, or it does not occur at all. It differs in no way from any other kind of hæmorrhage. A coagulum is formed in the cavity left, the rent slowly closes, and the coagulum slowly disappears; these processes, having nothing peculiar in them through all their stages, have been specially described and named; and, finally, the old dead ovary is found to be a tough fibrous structure covered with scars, and still containing evidence of cell-growth.

The ovary, then, is simply a gland, developed as other glands, and formed of similar elements; its peculiarity is, that its cell-nuclei have special powers during a certain time of life; and this simplification of its physiology does much to simplify its pathology.

The most common diseases of the ovary are those due to incomplete or perverted functions. Some rare cases there have been of inflammatory attacks, of cystic degeneration, and even of cancer, of the ovary in infancy and childhood; but, as a rule, the ovary is free from disease till after the age of puberty. During infancy and childhood, the processes of cell-growth and shedding go on, but without any indication of their action until those mysterious changes take place which indicate that a new function of the organism is about to come into action, the maturation of the ovum with the possibility of its impregnation. The chief external sign of this is the menstrual flow; but that this is no necessary part of the process is abundantly evidenced by the facts, that some women have large families without ever once having seen a catamenial discharge; that girls have become pregnant before the external evidences of puberty have appeared, more than one case of this kind having come under my own notice; and further, that women sometimes become pregnant after the entire cessation of the monthly flow for many years. Since we know, then, that the ovarian cell-growth is quite independent of the menstrual flux, and that it may even complete its functions without it, we can only regard the flow as an accompaning phenomenon, and as neither a cause nor a result. That this is really the case is further proved by disease; for in cases were both ovaries have been removed for follicular dropsy, and where it has been absolutely impossible that any evolution of ova could have taken place for many months, if not years, before the operation, the menstrual flow has occurred in normal regularity and quantity up to the time of the ovariotomy. On the other hand, we know that the flow of blood is intimately associated with the ovaries, for it usually ceases after the removal of both, and continues with uninterrupted regularity after the removal of only one, if the other be healthy; further, that any interference with the ovarian nerves, as their division by the écraseur or their inclusion in a clamp, will bring on the flow in a few hours.

The accession of puberty alters the nutrition of the ovary to the extent that, at the monthly periods, it shares in the general state of hyperæmia and excitement then common to all the sexual organs, and the whole economy seems to share more or less in the disturbance. Normally, this change takes places in the fourteenth or fifteenth year of life in this country; at an earlier date in hot climates. In strong, healthy girls, especially those engaged in active out-door work, still more those living a life approaching to the primitive state, the moliminal change is effected without suffering; but in girls brought up in refinement, of delicate habit and strumous parentage, there is much trouble. As a rule, this seems to be due to the onset of menstruation, and the other signs of the change while the ovary is still in its infantile or incompletely developed condition; that is, it is forming incomplete cells, whose nuclei are incapable of fulfilling their great functions, and the whole mechanism of ovulation is out of gear. In such cases, we find that the menstrual flux comes on either at irregular times or in insufficient quantity; or that, if it come regularly, it is over-abundant, and it is always accompanied by severe ovarian pain. This arrest of development is sometimes so complete that the ovaries may be said to be absent, though, clinically, this condition cannot be said to exist. The entire absence of the ovaries has been

proved only in deformed fœtuses. The arrest of development may, however, be so complete that menstruation may never occur at all, or only once or twice. In such extreme cases, the development of the whole sexual apparatus is generally arrested, the sexual appetite is in abeyance, and there is comparatively little suffering after the first few months, during which an effort seems to be made by the system to establish the change. This is provided epilepsy does not supervene; but it is only too common an accompaniment of arrested sexual development in women. Women who are thus affected have frequently an absence of those external peculiarities of their sex evident in roundness of form, a *prononcé* bust, smooth and hairless skin, and highly-pitched voice; and they often partake in some slight degree of the characters of the opposite sex, especially in the growth of straggling tufts of hair on the upper lip and on the chin in a line with the canine and premolar teeth.

A greater number of cases have the arrest at a later stage, and in them menstruation is established, after much difficulty and suffering, between 16 and 19 years of age, and, though it may last with fair regularity, but deficient quantity, for four or five years, it then ceases completely. In many of these cases, however, if marriage should occur during the time that menstruation is in action, and if the patient should be fortunate enough to become pregnant, a cure may result; that is, her periods will become more abundant, and her suffering less; her health will be improved, and she may go on menstruating for many years, and may even have a number of children. Even without the occurrence of pregnancy, marriage often establishes the health of a woman afflicted with arrest of ovarian development.

The great bulk of cases of this kind are those which are afflicted to a less degree, but whose sufferings are nearly always sufficient to require medical assistance; and it is a singular fact that a very large per-centage of the patients are found to be women of splendid physical development, who, to any but one well acquainted with such cases, look the most likely to possess capacity for procreation. In these women, menstruation is established later than the normal time by a few months or a year or two. They have at first irregular times and much pain, but after a while the flow is established with normal quantity and regularity, and with but little suffering. In this way, they go on for eight or ten years, and, if they marry in the interval, their menstrual career may run an ordinary course. If they remain single, however, they begin to suffer from ovarian dysmenorrhœa between 25 and 30, and,after about ten years' suffering, they undergo a premature climacteric change. It is also noticeable in these women, that their menstrual function is suspended on slight provocation. Any chronic disease, even of an unimportant nature, any occupation which necessitates an overstrain on their system, mental anxiety or sudden fright, will check their menstruation for months or years, or perhaps forever. In fact, this slight excess of functional power which the ovary became possessed of at their puberty is readily and soon exhausted, and its extruded cells, on slight provocation, assume an immature form, and the systemic conditions become correlated. In fact, ovarian amenorrhœa, and similarly to a less extent ovarian dysmenorrhœa, is a temporary resumption of the infantile condition of the ovarian functions; or, it may be, a complete and premature assumption of its senility. The amenorrhœa of pregnancy and lactation are partial resumptions of the infantile condition. This view has been admirably expressed by Dr. Charles Ritchie : " In early infancy, extreme old age, and long-continued organic disease, the ova are minute,

transparent, and structureless; and in advanced childhood, soon after the critical age, and during pregnancy and lactation, they are more or less organized, larger, and in the latter stage are often so well maturated, that about one-third of the renewed pregnancies of married women take place while they nurse."

In these slightest cases of ovarian dysmenorrhœa, the uterus is generally normally developed, and it is frequently so in some of the most severe cases. There is a converse condition, where the uterus is infantile and the ovaries normal, much more rare and far more severe in its symptoms.

In ovarian dysmenorrhœa, the general symptoms are pretty constant and distinctive. Besides the menstrual irregularities and deficiency, there is almost always a persistent, sickening, and well-marked ovarian pain, occurring in the less severe cases only at the menstrual periods, but in others being seldom absent, and always greatly increased at the periods. It originates in the ovarian region, and shoots down the thigh, often also down the leg and round to the back. There is also often present, especially on the accession of atrophy, the peculiar submammary pain of ovarian disease, generally felt in the left side only. Headache, nausea, or even sickness and great general discomfort, are always present more or less.

In the milder cases, treatment is generally successful in mitigating the sufferings, and often the ovary may be made, even in some very well marked cases of arrested development, to fulfil its functions completely. First of all therapeutic remedies there stands iron, which will be found in such cases to be of great use, even though there should be no general indications for its employment. There can be no doubt that many forms of this remedy have a specific power over the sexual organs, male and female; for, in a case of chronic metritis or subinvolution, smart hæmorrhage may be induced by large doses of iron. In ovarian dysmenorrhœa, it is best given during the intermenstrual periods in small doses, one to five drops of the liquor ferri perchloridi, well diluted, and increased suddenly to fifteen or twenty for a day or two previous to and during the menstrual flow; or quite as good is the substitution for this large dose, of an iron and aloes pill, there being few better combinations in the Pharmacopœia than that old-fashioned remedy. Hot hip-baths and leeches to the perinæum at the period are often useful additions, with an occasional blister on the sacrum. To such as this, the treatment of delayed or difficult menstruation at puberty, due to inefficient ovarian development, must be confined; for the other means are only allowable in very obstinate cases, after the patient has been married, or when there are indications of premature ovarian atrophy. Marriage is, perhaps, the most efficient remedy, and one we ought seldom to hesitate to recommend; for, even if the patients should not have children, they will have better health, and they may even become pregnant if they marry early enough and are not mismanaged.

The last and most powerful aid is mechanical irritation of the uterus; but, as it is not free from risk, and therefore requires careful use, it is not always to be recommended. It is, besides, in the class of cases where the uterus is most at fault that it is least risky and most serviceable. The method of irritation I generally employ, as the most convenient and least troublesome, is the insertion of Simpson's galvanic pessary. This instrument has by some writers been very much decried, but I think by those only who seemed to have used it indiscriminately and without reference to a proper selection of cases.

The irritation set up by the presence of a galvanic stem in the uterus is communicated indirectly to the ovaries in a manner that is not as yet explicable, but that it has an influence is beyond doubt, and, if it remain within bounds, it is in a large number of cases beneficial. A large experience has shown me that it is only in occasional instances that the stem cannot be borne, and that, if carefully watched during the first few weeks of its use, these cases are easily eliminated. In a case where I have been led to regard the use of the stem as advisable, I always begin with a small size, and after this has been worn for two or three months, I change it for a larger one. For the first week after its introduction, it is not unusual for the galvanic stem to give rise to considerable discomfort and even positive pain, but this usually passes off if the patient keeps her bed for a few days, and there is no further trouble save from the leucorrhœal discharge, which is a part of the process. The action of the stem is not purely mechanical, as has been stated; for, very soon after its insertion, the zinc becomes coated with an albuminous deposit, from which the copper is free, and the zinc becomes corroded. It is certain, therefore, that there is a galvanic action set up, and the stimulating effects are due partly to this, and partly to the interior of the uterus being constantly bathed in a weak solution of chloride of zinc. However produced, it is certain that the uterus rapidly enlarges under the action, and there is every reason to believe that the ovaries take part in the increased activity. If once the uterus becomes accustomed to the presence of the galvanic stem, it may be worn for many months, and the longer it is retained the more permanent will be the benefit; but if after a trial of a few months, say four or five, there is no apparent alteration for the better, the attempt should be given up, and the case considered as hopeless.

In a very large number of cases of incompletely developed ovaries, another remnant of infantile life is met with in an exaggeration of the normal curve of the uterus, amounting sometimes to complete anteflexion, and in this class of cases the galvanic stem is especially serviceable.

The results of my attempts to arrest premature atrophy of the ovary from any cause, when once begun, have been far from satisfactory; and this has been more especially the case when that atrophy has been due to a constitutional disease, such as tubercle. Sir James Simpson had a belief that the pretubercular amenorrhœa, so often seen in young women, was a cause of the subsequent disease; and he therefore directed his attention to the restoration of the utero-ovarian function, as a means of treatment or prevention of the consumption. From the views previously expressed, it will easily be seen that I consider his theory to be based on error, though in some cases his treatment would seem to have been successful; but how much of his success was due to local and how much to general treatment cannot now be determined. It is not, however, a practice likely to meet with many followers.

A singular condition has been noticed recently by Dr. Priestley, of intermenstrual pain, occurring about midway between the periods, which is almost certainly due to an ovarian condition, though it is not clear of what kind. Since reading his paper, I have seen two cases, but have been unable to refer them to any category.

The ovaries are liable to certain displacements, which may give rise to many disagreeable symptoms without any actual disease of the glands. Thus one or both ovaries may, by a relaxation of their peritoneal investments, drop into the retro-uterine *cul-de-sac*, and there be a source of great trouble. This will be especially the case if there be at the same

time retroflexion or retroversion of the uterus; for I have known such a displacement of an ovary utterly to prevent the application of any apparatus for the replacement of the uterus, and cause so much suffering as almost to make us discuss the question of ovariotomy. In such displacement, pressure on the gland gives rise to the same sickness and faintness as pressure on the testicle produces in the male, and the passage of a hard motion will give rise sometimes to most alarming symptoms. A more rare displacement of the ovary is forwards, this being generally an excess of embryonic transition, and it may be carried so far as to take the ovary into the labium, after the manner of the descent of the testicle. Cases of this kind are given by Oldham and Rigby; and Percival Pott (Chirurgical Works, by Earle, Vol. II. p. 210) actually removed both ovaries displaced in this way; and Dr. Meadows has removed one (Obstet. Soc. Trans., Vol. II.). Cystic degeneration is said to have occurred in this position, and a Spanish surgeon has recorded the removal of a cystic ovarian tumor from outside the inguinal ring. I have had no experience of this displacement.

I have, however, met with a very singular case of ovarian displacement, where the condition was evidently congenital, and was discovered only when an operation had to be performed for the removal of the misplaced ovary on account of cystic degeneration. The tumor was of very large size, and for its removal the usual median incision was made between the umbilicus and the pubes. No difficulty was encountered until I attempted to drag the upper part down through the incision, when I found a broad band of union extending upwards from the umbilicus. The peritoneum passed from the abdominal walls on to the tumor, just as it does on to the rectum, and the union was evidently not merely inflammatory adhesion. On dividing the peritoneum, I found that the common tendon formed part of the cyst wall, and that the fibres of the rectus abdominis muscle were inserted into the cyst. The round ligament of the liver ran through the cyst wall to the umbilicus; and on being cut through, the umbilical vein contained in it bled profusely, and had to be tied. Very careful dissection had to be made to remove the cyst, and when it was completed it was found that a large triangular gap was left in the abdominal wall, covered only by skin, and having its base at the umbilicus, and its apex at the xiphoid cartilage. This gap was closed by subcutaneous stitches of silver wire, and the patient made a perfect recovery, and has since been safely confined of a living child. Careful examination of the tumor satisfied me that the only explanation which could possibly be offered of these unusual conditions was that the ovary had become attached to the cleft in the visceral arches during early embryonic life, and had subsequently been affected by cystic degeneration.

Klob has described a twisting of the ovary on its axis which is probably congenital, and has not yet been found to be of any pathological importance in an otherwise healthy ovary. In the cystic ovary, a similar twisting has been observed to a more complete extent, and with disastrous results, as will afterwards be described. The ovary is sometimes completely detached from its normal position and relations, and forms new attachments elsewhere. This occurs with the healthy ovary, and, as Mr. Spencer Wells has shown, also probably after it has undergone degeneration. How and when it occurs have not yet been satisfactorily explained. In uterine procidentia and prolapse, corresponding displacement of the ovaries occurs.

Hermaphroditism.—If the law of evolution embraces all organized structures—and its details have now been so fully worked out that we

may assume that it does—we must accept Darwin's theory of the descent of man. This acceptance at once becomes the explanation of the occasional occurrence of bisexual vertebrates, and consequently of true hermaphroditism in human individuals. Conversely, the occurrence of such malformations may be offered as one amongst the many proofs which are being accumulated from every quarter in favor of Darwin's theory, for they must be regarded as reversions of type. In the vegetable kingdom the majority of the species are bisexual, though modern investigations have shown most ingenious contrivances to secure the advantages of cross-fertilization. Even in the more complex organisms of the animal kingdom, bisexuality is met with as high up as the nudibranchiata, whilst in the next sub-order, the prosobranchiata, most of the groups are unisexual. In the cephalopoda, where other great advances in structure are indicated, unisexuality is the rule. From this point a symmetrically double body is introduced into the schema, though it is met with also in the insecta, and the sexual organs are double, one in each half of the body. But as in the insecta, where unisexuality is the rule, hermaphroditism occurs with some frequency, so it does in the lower vertebrates, the frequency of the malformation diminishing, until in man true hermaphroditism is found very rarely. In all cases of hermaphroditism in animals where unisexuality of the individuals is the rule, the doubly-sexed organs are always imperfect, even in insects; and in most of the cases recorded in birds there has been on the male side only a convoluted seminal tube and no testicle, so that the tube might have been taken for an aborted oviduct, had it not been, as in one of Simpson's cases (Encyclop. Anat. and Physiol.), for the coincident presence of the characteristic epithelial appendages of the male. In Simpson's second case, I do not think there was any evidence of true hermaphroditism.

The human testicle and ovary being developed from the same blastema, and being really the same organ, it is not surprising that occasionally reversions of type should occur, so that an immature testicle should appear on the one side, and an imperfect ovary on the other. According to Simpson, the ovary in these cases appears generally on the left side. This distinguished author has collected from many sources a large number of cases, the descriptions of some of which are not above suspicion; but in others, especially that recorded by Dr. Banon in the Dublin Medical Journal for 1852, the facts are beyond dispute; for the examination of the textures of the gland on either side by the microscope completely established that one was an ovary and that the other was a testicle, though both were so immature as to contain no perfect products. There was an imperforate penis, the urethra opening at its root, and behind this a genital canal closed by a perfect crescentic hymen, a fact which at once removes the case from the classes of spurious hermaphrodites already described. This genital canal led up to a small well-formed uterus with normal relations to the bladder, rectum, and peritoneum, and having at its left corner a perfect Fallopian tube with a corpus fimbriatum. In relation with this there was an ovary. There was neither tube nor ovary on the right side, but a testicle containing the characteristic tubules, and provided with an epidydimis and vas deferens. Simpson calls this true lateral hermaphroditism; and he further describes what he calls true transverse hermaphroditism, that is, where the internal organs, testicles, or ovaries, are alike on the two sides, but the external organs represent appearances somewhat like those of the other sex. But it is not clear in any of the cases he quotes that the malformation was anything more than

an extension of the characters of spurious hermaphroditism; and as the glandular element must always be considered as the chief element of sex, it is not a philosophical proceeding to say that both sexes are represented unless both a testicle and an ovary are present. Even when the clitoris is perforated by a urethra as far as the glans, the condition is only that seen normally in the *Loris gracilis*.

In Simpson's third variety, to which he gives the name of "true double or vertical hermaphroditism," he describes the presence of a gland of each sex as present on both sides, or, as he says, "actual sexual duplicity." Without denying the possibility of such an occurrence, I must say that I think it very unlikely, and I have no hesitation in saying that none of the cases he quotes justifies the establishment of this variety. The most complete case is that recorded by Vrolik, and he distinctly states that neither in the structure which he supposed to be testicle nor in that considered to be ovary did he find a trace of histological evidence of the nature of the gland. Mere anatomical position goes for nothing in such a case, for the ovary descends sometimes in the same way as does the testicle, for it also has a gubernaculum. It must also be borne in mind that occasionally appendices both to testicle and ovary are met with, giving the appearance as if the individual had three or even four testicles or ovaries. If such a condition were met with in a hypospadic male who had at the same time an enlarged prostatic utriculus, as many of the cases quoted by Simpson undoubtedly had, and if the testicular appendix had not descended with the true testicle, the appearances would be exactly as described in most of Simpson's cases, and yet there would be not the slightest reason for the statement that both kinds of glands were present. The only satisfactory test is that of microscopic examination; and so far the evidence goes to show that there is only one kind of true hermaphroditism, that in which there is an ovary on the one side and a testicle on the other.

The cases lately recorded by Leopold, of Leipsic, and C. E. Underhill, of Edinburgh, are clearly cases of descent of undeveloped ovaries into the inguinal canal, instances of hypererchesis.

There is a large class of ovarian disease due to altered hæmic nutrition of the gland, which clinical experience proves to be far more common than pathological investigation has yet shown. Of the prime factors in these cases we are as yet ignorant; but, clinically, they range themselves naturally into three groups, differing probably only in degree of severity, save in the cases where acute ovaritis has a specific origin. They are:

1. Ovarian hyperæmia;
2. Chronic ovaritis;
3. Acute ovaritis.

It may seem a metaphysical refinement to make a distinction between the first and second of these classes, but I have long satisfied myself that it actually exists. Ovarian hyperæmia is the result of an over-sufficient and generally precocious ovarian activity, and is, therefore, the converse of the condition I have detailed under ovarian amenorrhœa and dysmenorrhœa. It is far from being a rare affection, and is invariably well marked in its history, the chief detail of which will generally be found to be menorrhagia. In a typical case which I have now under my care, the following is a summary of the facts. The young lady is the child of parents of markedly nervous temperament, is well-grown, I might almost say prematurely developed in every way, and, when little over thirteen, began to menstruate. From the beginning, her periods were profuse, and at first

painless. She enjoyed excellent health for many months after the accession of menstruation, during which time the flow continued profuse, generally lasting for six days or a week, and necessitating the use of from four to six napkins daily. By the time she was fourteen, it was, however, evident that her health was suffering. She became listless, sleepy, fainted when at her lessons, gave indications of loss of memory, and, when I saw her first, she was decidedly anæmic. At that time, it wanted but two or three days before the accession of her period, and steady pressure over the ovaries gave her great pain, which she described as turning her quite sick. During menstruation, this pain was induced by less pressure, but in the intermenstrual period it could not be produced at all. She always seemed better in health during the flow, and it was this very common peculiarity that prevented her parents from applying earlier for the much-needed advice.

In such a case, there cannot be a doubt that there is hyperæmia, not only of the ovary, but of the whole sexual apparatus, due to, it may be, or more probably only accompanying, the increased ovarian activity. This of itself is not a source of danger, for that lies in the menstrual loss producing anæmia. I have not yet had an experience sufficiently extended to trace such a case throughout its course; but meeting with many instances which I have had reason to regard as identically of the same nature in later stages, I believe that their menstrual history is much the same as that of other women after they have had a child, the process of gestation seeming to rectify in great measure the abnormal excitement. If they remain unmarried, they go on suffering from menorrhagia, become extremely anæmic, and have the menopause at the usual time, but marked with abnormal profuseness, as might be expected. I have repeatedly had occasion to observe that marriage, even without resulting pregnancies, seems to modify the menorrhagia in very great measure.

The treatment of such cases should, if possible, be begun in the first stage. There is no cause of deteriorated general health so certain for a young woman as profuse menstruation due to ovarian hyperæmia. The spanæmic condition induced by a few years' continuation of it is one over which iron seems to have no control; indeed, all ferruginous preparations ought to be sedulously avoided until the menorrhagia has completely ceased.

In the case I have narrated, my first advice was, that the patient should be removed from school, and that, for six months, all instruction, especially in music, should cease. I notice music especially, for I am quite certain that instruction in that art, as carried out in boarding-schools, has to answer for a great deal of menstrual mischief. To keep a young girl, during her first efforts of sexual development, seated upright on a music-stool, with her back unsupported, drumming vigorously at a piano for several hours, can only be detrimental. It is usually the habit of those who superintend the education of girls to make no difference whatever in their physical and mental exercises during their menstrual periods; and at a time when the great necessity of the system is perfect rest, laborious efforts have to be made. This is most pernicious, and I have repeatedly had to trace to it the existence of serious disease in young ladies. Musical exercises are especially hurtful, for the further reason that music, in those who are devoted to it and gifted with its necessary peculiarities, is a strong excitant of the emotions; while to those not so gifted, and who do not care for it, musical exercises are an intolerable and useless burden. Absolute rest is an essential part of the treatment of the early stage of ovarian hyper-

æmia, and I need scarcely say that it is in its early stage that the treatment is most likely to be successful. This rest ought to be rigorously carried out by the patient being confined to the prone position for a few days before, during, and for a few days after, the catamenial flow. The application of a counter-irritant over the ovarian region just before the period is very useful; but the most potent part of the treatment consists in the administration of ergot before and during the period, and of the salts of potassium continuously during the intermenstrual time. The ergot is best given in the form of ergotin, my favorite formula being half a grain of Bonjean's ergotin made into a pill with sufficient lupulin. The bromide I give night and morning, after meals, in doses from five to ten grains. There is a good deal to be done in moral treatment. It may be only a coincidence, but I have noticed this affection chiefly in girls who have had no brothers, or brothers only younger than themselves; and I am quite certain that great harm is done to many girls by their rigid social seclusion in youth from the companionship of boys. Under proper supervision, no wrong could happen from more unrestricted association of boys and girls at their critical periods; and it seems to me that it is a mischievous plan to draw wide barrier-lines between the sexes at a time when they ought to begin to understand themselves and each other; and, by harmless intercourse, many of the risks may be obviated which afterwards beset them when an unaccustomed association is opened out at an age when instinct has the chief ascendancy.

All the cases of ovarian hyperæmia which I have met with at puberty have yielded to the treatment I have detailed, and many cases which I have had reason to regard as of this nature, but in a later stage, have been benefited by it. It is, however, in the perfect fulfilment of the function of the utero-ovarian organs that we have the radical cure.

Ovarian hyperæmia is sometimes met with as the result of marriage, but only when the marital acts have been indulged in to excess, and then especially when pregnancy has not resulted. This, in fact, is only the mildest form of a serious disease which may end in total inflammatory disorganization of the ovaries of newly-married women. It is not unusual to find a delicate woman, who had menstruated normally previous to her marriage, suffer from severe menorrhagia for the first three or four years of married life, and to find an explanation of this in the vigor of the husband. In these cases ovarian tenderness is always present, and very frequently there is violent pain and tenesmus, lasting for hours after connection, so that soon the unfortunate sufferer dreads the idea of a marital embrace. The menstrual period becomes prolonged, so that there is left only an intermenstrual interval of a few days. In prostitutes of a tender age, this affection is of extreme frequency, and often ends in the chronic ovaritis with adhesion of the Fallopian fimbriæ to the ovary, and the subsequent atrophy of all the sexual structures so often found in their bodies. The recurrent inflammatory attacks thus induced in these unfortunates have been termed *colica scortorum*. The cure depends, of course, on the removal of the exciting cause and the employment of such treatment as has been before alluded to.

In these cases no line can be drawn which will define where simple hyperæmia ends and acute or chronic ovaritis begins. As acute ovaritis is, however, always, or has been at least in my own experience, due to specific causes, it is more than likely that the ovarian hyperæmia passes into chronic ovaritis without an intermediate acute stage.

Concerning chronic inflammation of the ovary, but little is to be found

in the writings of our authorities in gynæcology; and it has only been by the careful grouping of the symptoms of a large number of cases that I have been able to satisfy myself that the condition may be accurately defined and readily diagnosed, and, further, that it may be successfully treated in the majority of cases.

As I have already indicated, chronic ovaritis may be a later stage of moliminal hyperæmia. It may also be the result of acute ovaritis; but the majority of the cases occur from sexual excess and masturbation, or as a sequela of exanthemata and rheumatic fever, and probably of syphilis. I have only once had an opportunity of dissecting a case where I had recognized chronic ovaritis in life, and then it certainly was the result of acute rheumatism. It occurred in the case of a girl seventeen years old, who had suffered from eight or nine attacks of rheumatic fever. In two of them, she was under my care as a dispensary patient; and after the recession of the articular affection, an attack of pelvic pain came on, which was increased by pressure, and the attack was accompanied by an irregular menstrual flow. The whole passed off in a few days after the application of a blister, but ever afterwards her menstruation was irregular, profuse, and painful, and she suffered more or less from the symptoms I shall describe immediately. I regarded the attack as one of mild acute or subacute ovaritis, followed by a chronic stage. She died subsequently of embolism of a cerebral artery, and I found her ovaries large, soft, covered with lymph, and dotted with enlarged follicles, and the peritoneum was thickened round them. The left ovary was partly adherent to the rectum, and it had nearly the whole of the fimbriæ of the corresponding tube glued on to it.

There is probably a chronic ovaritis of occasional occurrence in chronic phthisis; for though the rule in that disease is to have ovarian atrophy, evinced first in dysmenorrhœa and finally in amenorrhœa, yet I have seen a few cases where the menstruation was profuse, irregular, and characterized by the other symptoms of chronic ovaritis. I have seen such conditions temporarily after small-pox, and frequently after scarlet fever in adolescent women. One case I have also satisfied myself of in early acquired syphilis. There is a distinct form of syphilitic metritis, as pointed out long ago by Mr. Langston Parker, and no doubt in these cases the ovaries are involved. Chronic metritis, the result of subinvolution or other uterine accident, and chronic endometritis from catarrh or gonorrhœa, in all probability have some amount of accompanying chronic ovaritis.

Out of eighty-one dissections, Henning found the ovaries diseased in fifty-three cases, and of the latter number six had exudation over them that was in all probability inflammatory. Chronic ovaritis, then, is not an uncommon disease. It is very often unilateral, and in these cases it probably has had an origin more or less independent of the uterus. Thus, as the result of acute septic ovaritis, it has been, in my experience, invariably unilateral. When it is the result of sexual excess or moliminal hyperæmia, it is generally, though not invariably, symmetrical.

The symptoms which have enabled me to class a number of cases together as chronic ovaritis are, first, in the history of the case, that from the molimen the periods have been irregular, generally too frequent, and that they have been too profuse. If the affection have a subsequent origin, then there can be obtained some story of a reason for the disease, either in a gonorrhœal infection or a puerperal accident leading to acute inflammatory attack, or an over-indulgence in sexual congress. There is always a sense of weight and fulness in the ilio-hypogastric regions, and there

may be positive tympanitic swelling. The discomfort is often so great, that the patient cannot bear her stays tightened or the weight of her dress. Sickness and nausea are frequently present, and almost always for a few days before the menstrual periods. The sufferings from sick headache are often intense. There is always more or less tenderness on pressure over one or both ovaries, and this is invariably increased before, during, and after the catamenia. By tactile examination, this tenderness may easily be demonstrated to be ovarian, and in very many cases the ovaries may be found to be enlarged and tender by the bimanual method of examination. Sometimes examination by the rectum permits a better investigation, especially if the patient be anæsthetized. As a rule, there is not much menstrual pain; for the uterus, sympathizing in the disturbance, is often enlarged, and the discharge comes away almost painlessly.

The treatment should consist mainly of organic and systemic rest as perfect as possible during the menstrual periods, and the administration of ergot. Between times, counter-irritation may be used with advantage; and the best form of that I have found to be painting a circumscribed spot of skin in the inguinal region, about two and a half inches in diameter, with linimentum iodi every morning as long as the skin will bear it. When the spot has become too painful to allow a repetition of the painting, the cuticle is allowed to peel off and the skin to become firm, and then the process is repeated as often as may be found necessary. I have had patients going on with this for months, and it nearly always does them good. Further, I give bromide of potassium internally, sometimes combined with ergot. I have also found arsenic and cod-liver oil very useful, and one case yielded to large doses of quinine when everything else had failed.

It is probable that a good deal of the disturbance in these cases is kept up by the extravasations of small clots into the peritoneum by a want of adjustment to the ovary of the Fallopian mechanism, and the majority of the ova are lost in the retro-uterine *cul-de-sac*.

So far as I know, acute ovaritis is the result of four conditions only:

1. Injury;
2. Gonorrhœal infection;
3. Septic poisoning in the parturient condition;
4. Exanthematic fevers and acute rheumatism.

In one woman, I diagnosed acute ovaritis following injuries inflicted by her husband kicking her; and though it may have been general pelvic peritonitis, yet the uterus never became fixed as it does in that condition, and the subsequent permanent disturbance of menstruation, accompanied by other signs of chronic ovaritis, confirmed me in my opinion.

Acute ovaritis from gonorrhœa is a common result of the infection, and is a frequent cause of sterility. It seems to be precisely similar to the acute epididymitis of the male, as was first pointed out by Bernutz and Victor de Méric. In this affection, the patient is found with an anxious face, agonizing pelvic pain generally only on one side, the knees drawn up, and all the signs of a severe inflammatory attack. The patient can lie with comfort only on the back, and micturition and defæcation are productive sometimes of excruciating pain. It is often impossible to make a vaginal examination without an anæsthetic, and this had better be used at once, for it is a matter of consequence to diagnose between acute ovaritis and pelvic cellulitis. In the latter, the tumor will be found attached to the uterus and moving with it and with the whole roof of the

pelvis, and will be found to be more or less fixed; while in ovaritis the enlarged ovary may, as a rule, easily be made out. The treatment should consist in leeches to the perinæum, a blister over the ovary, diuretics, and small frequent doses of opium. The rectum should be well evacuated by an enema, and the bowels kept quiet for a few days. This affection, as far as is known, generally results in disorganization of the gland and the formation of adhesions round it; if both glands be affected, permanent amenorrhœa may result. I have not met with any indication of the formation of abscess in this affection, nor do I know of any record of such a result. The hypothetical stages and varieties into which the affection has been divided do not seem to be of any practical use.

Gonorrhœal ovaritis is an extremely treacherous disease, or rather perhaps I ought to say that gonorrhœa is a disease which in women may be fraught with the most serious and unexpected consequences. Some years ago a gentleman who had been a short time married, visited a neighborhood where he unfortunately met a friend of his bachelor days. Within forty-eight hours he came to me in terrible distress, with the initial symptoms of gonorrhœa, but with the still more terrible dread that he might have conveyed it to his wife, for intercourse had taken place a few hours before his symptoms appeared. Of course I at once cautioned him to refrain absolutely from intercourse with his wife, advice which I have no reason to believe that he disregarded. His gonorrhœa proved very trifling, and passed off entirely in less than a week. Wishing to take his annual holiday, he brought his wife to me to make sure that she was free from disease, and I could not find the slightest trace of vaginitis. I therefore sanctioned their travelling to a considerable distance. But within three days I was summoned to her, and found her suffering from a most severe attack of inflammation of the left ovary. After some weeks she got well, though the ovary could be felt, both by rectum and vagina, as large as a small orange, firmly fixed and exquisitely tender. Suddenly the right ovary became similarly affected; and after a most severe illness, during which she seemed frequently at the point of death, she recovered, with the right ovary similarly enlarged and fixed. She never menstruated after this second illness, and she now lives a semi-invalid life, hardly ever free from pain, and unfit for any great exertion, though as time goes on her sufferings seem to obtain slight amelioration. She is quite unable to endure marital intercourse.

The history of such a case is undoubtedly that the poison has permeated the uterus and Fallopian tubes, alighting on the ovary from the tube probably at the time that the fimbriæ were in association with it; but it is somewhat surprising that there was never any trace of vaginitis.

A case of alternating ovaritis, for which I have been unable to discover any cause, has been for some time under my care in hospital practice. The patient, J. K., aged twenty-five, came to the hospital with well-marked acute inflammation of the left ovary. She had been married for three years, and had never been pregnant. There was nothing in her history to make me suspect that she had suffered from gonorrhœa, nor did she know of her husband having so suffered. The left ovary recovered in a few weeks, but remained somewhat enlarged and very tender, and it was also somewhat fixed. In about two months she came back with the right ovary quite as severely involved, and has since been several times under care with recurrences on one or other side; but both ovaries have never been attacked together, and none of the attacks have been associated with menstruation, which, always irregular, has been gradually getting rarer

and more scant. The most probable explanation of this curious case is, that she is exposed every now and then to some infection which travels up her Fallopian tubes, and attacks the ovaries without giving any indication elsewhere of its presence. The possibility of such an event must always be borne in mind, and as a guide to future directions it may be advisable to ask cautiously into the history of an attack of acute ovaritis.

Of acute ovaritis in childbed from septic causes, as distinguished from general septic peritonitis in which the ovary is involved, my experience is limited to one case in which, like those recorded by Simpson, Bernutz, and others, an abscess resulted. The infection occurred after a miscarriage in the wife of a medical man, and was distinctly limited to the two ovaries, as was readily determined by an examination under an anæsthetic. An abscess formed in the right ovary, and I tapped it in the early stage by means of the aspirator, with a completely successful result. The general symptoms were pain, elevation of the temperature, night sweats, drawing up of the knees, inframammary pain, and pain shooting down the thighs and legs. The chief remedies employed were counter irritants, such as turpentine stupes and blisters, and the internal administration of quinine and opium. The aspiration was of course performed through the vagina.

A large per-centage of the cases which have been recorded as abscesses of the ovaries seem to me to have been suppurating or dermoid cysts. The ovary is, of course, always, or at least very frequently, involved in pelvi-peritonitis or perimetritis; but I do not regard this as an ovarian disease. Ovarian apoplexy would seem to be an occasional accident of ovulation, found in post-mortem examination, but without much clinical importance, unless by the same process, a pelvic hæmatocele is formed. Hæmorrhage into an ovarian cyst, described by Kiwisch as a variety of ovarian apoplexy, cannot be considered in any such light.

The occurrence of acute ovaritis in certain of the exanthemata, or as a sequela to them, has never yet, so far as I know, been placed in sufficient prominence. I have already alluded to it, but I wish here to record further experience gained from an epidemic of small-pox of considerable severity which existed in Birmingham from 1872 to 1874. Though practising exclusively as a gynæcologist, it is somewhat curious that I was called in consultation to four cases as instances of pelvic ailment which ultimately proved to be cases of small-pox. One of these gave the clinical features of the exanthematic ovaritis with great clearness. She had been married four years, and had been confined twice. She was pregnant for the third time in September, 1873, when she was seized with a sudden rigor, followed by severe pyrexial symptoms. These rapidly became localized in the pelvis, the patient complaining of excruciating pain in each iliac fossa. I saw her on the fourth day of her illness, and found her suffering from double acute ovaritis and threatening abortion. She aborted on the fifth day, and then showed a papular eruption of small-pox, which rapidly became confluent. She made a very protracted recovery, and has never menstruated since. The fundus uteri is fixed down on the sacrum, and both ovaries are enlarged and tender, the left being firmly fixed alongside the uterus.

In hospital practice I met with a large number of cases, of which the following is a good example: H. B., aged twenty-two, began to menstruate a short time after she was fourteen, and was quite regular till August, 1872. At that time she had an attack of small-pox, which she says was not severe, and which has not left any deep marks. Up till the time of that illness she was strong and robust, and never knew what illness

was. During the attack she had a very profuse menstruation at an irregular time, and this was followed by severe abdominal pain which was treated by hot fomentations. She did not get rid of this pain entirely for some months, and since then she has menstruated at long intervals, the discharge being very scant, and accompanied with great pain. She is now very anæmic, though still stout, short of breath, and has a loud systolic hæmic murmur at the base. The ovaries are not to be felt at all, and therefore it is probable that they have become atrophied. She obtained considerable relief from small doses of iron, combined with chlorate of potash. I have no doubt that she had an attack of acute exanthematic ovaritis which has led to atrophy of the organs.

I have repeatedly seen, on post-mortem examination, atrophy of the ovaries in women who had by no means reached the usual climacteric period of life, but had prematurely ceased to menstruate. In one case only could I get a history of the menstrual life of the patient, which was to the effect that she had not begun to menstruate till twenty years of age, and had ceased before she was thirty; and about that time she had an illness which probably was scarlet fever. The ovaries were small and shrivelled, and a stained section showed that nucleated and banded fibres constituted the bulk of the glands. Here and there, in small loculi whence the bands seemed to radiate, a small group of cells served to indicate the site of a Graafian follicle, but no perfect follicles could be found. This extreme instance was the result probably of two factors, insufficient development and exanthematic atrophy. I think that in such cases it is likely that future observation will establish the existence of an interstitial oophoritis, distinct in character and perhaps in origin from the ordinary acute inflammation of the peritoneal covering of the ovary, to which latter we might more appropriately give the name of peri-oophoritis. The results in the two classes seem to be different; for in the second, menstruation does not seem to be suppressed, but, on the contrary, it is sometimes excessive; whilst as a result of the supposed interstitial form we have ovarian atrophy and amenorrhœa of an incurable form; and when it occurs in puerperal women, superinvolution of the uterus.

I have met with a small group of cases which I can only class under the head of ovarian neuralgia. They have been characterized by acute lancinating pain referred to the region of the ovaries, generally on both sides, coming on paroxysmally without any reference to the ovarian functions. No physical signs of disease have been found in these cases, and they have all been in women approaching the menopause, and who have all been addicted to outbursts of over-indulgence in drink, taken, as they allege, to deaden the pain. Whether this inebriety was a cause or a result of the neuralgia, or whether the neuralgia in some of the cases may have had any actual existence, I am unable to say; though the special character of the pain and its site have been described by the sufferers with a constancy which would seem to vouch for its reality. In connection with this affection, I would here urge the necessity for the medical profession strongly to combat against the wrong women are often allowed to do themselves by taking spirits to relieve ovarian and menstrual pain. No habit can be more pernicious, or more likely to lead to the most deadly mischief, both physical and moral.

Hypertrophy of the ovaries occurs in two forms, as it affects the follicles of the gland or its fibrous tissue. There may be, as Dr. Ritchie and Dr. Fox have pointed out, an increased formation of the number of follicles, this, in all probability, being a pathological feature of the ovarian hyper-

æmia I have described. Follicular hypertrophy may take the form of increase in size of individual follicles, and constitute, as first shown by Rokitansky, a variety of cystic growth. Hypertrophy of the stroma of the ovary is a more common affection than is supposed, and seems to be one especially frequent in the better ranks of life. Cases may partake of a combination of one or other variety of the follicular hypertrophy along with the fibrous.

The fibrous hyperplasia is probably very often the result of chronic ovaritis of a kind which attacks less the peritoneal surface of the gland, and more its internal structure. It results in follicular atrophy, or arrest of development of the proper ovarian cells, and cirrhosis of the trabeculæ.

The cases which I have seen have all been in the middle and upper ranks of life, with one exception in a hospital patient, but even she had a look and air of delicacy and refinement that belied her station ; and she, moreover, is the only one in whom I have yet succeeded in getting the utero-ovarian function fulfilled. She is now a mother. To illustrate my observations, I may quote at length from my note-book the case of Mrs. ——, as illustrating many of the points of ovarian pathology on which I have dwelt, and as a typical case of fibrous hypertrophy of the ovaries, resulting probably from chronic ovaritis. She is now twenty-eight years of age; is a pretty delicate blonde of nervous temperament and most refined caste of features, and has been married nearly three years. She has a history of hyperæmia of the ovaries at an early age, and has had always very profuse, and generally irregular, menstruation until within the last three or four years, when it has been scantier and less frequent. From November, 1871, until she came under my care, she had had only one normal period (in seven months), and another in April, 1872. Since the former date, a constant, offensive, brown discharge had been present, which was increased by exertion. She had pain and straining after coitus, pain on defæcation, loss of appetite, and frequent sickness. Examination revealed a condition of enlargement and tenderness of the uterus, openness of the cervix, and decided retroflexion of the fundus, with a tendency to retroversion of the whole organ. The cavity was not larger than normal, but the passage of the sound gave great pain. The displacement was easily reduced, and then it was found that both ovaries were very much enlarged and tender, the left especially. They could both be distinguished by bimanual touch as quite free from adhesion, readily moving about. I introduced a ring pessary to rectify the displacement, much to her comfort, and directed the use of iodine paint in the manner previously described. She also took a tonic mixture consisting of cinchona and angostura, and the uterine cavity was occasionally washed out with a weak solution of neutral acetate of lead. The latter part of the treatment was discontinued after a few months, but the counter-irritation and the pessary were persevered in, along with occasional recourse to tonics. In October last, the brown discharge had almost disappeared and the right ovary could be felt to have distinctly diminished in size. The uterus was also straight and the cervix closed, and the whole organ of a much less size. Early in November there was a slight menstruation lasting three days, and in January of this year there occurred quite a normal period of four days, followed by rather profuse leucorrhœa. In February, as the expected period did not occur, I ordered her small doses of iron, in the form of ten drops of Parrish's syrup of the phosphates, taken thrice daily. In March, she was unwell

from the 16th to the 20th, and I have little doubt that her patience will be rewarded by complete recovery of the functions of the right ovary, and possibly the occurrence of pregnancy.

Another case closely resembling this, I extract from my hospital note-book. The patient was a young and somewhat refined-looking woman in whom menstruation appeared unusually late, when she was about seventeen years of age. She had been married seven months, and for that time had been losing almost continuously. Sexual intercourse had been indulged in very frequently, and for a few hours after it the loss was always increased. On each side of the uterus a large nodulated ovary, extremely hard and not in the least sensitive, could readily be felt. The glands were at least four times the normal size, and the nodulations were so marked as to resemble those of the cotyledons of an ox's kidney. Bromide of potash, ergot, iodine blisters and enforced continence effected a temporary relief, but the husband of the patient confided to me some time after I had lost sight of her, and after they had separated, that her sexual appetite became of the most immoderate intensity, so that he had to leave her.

Such a condition of the ovaries as I believe exists in a case like this is frequently met with in post-mortem examinations, and has recently been twice found by Chantreuil, who does not, however, give its microscopical characters. I have not been fortunate enough to have examined an ovary so affected.

The occurrence of ovarian gestation has been strenuously denied by many writers, and up to the appearance of a paper by Dr. Albert Puech, in the Annales de Gynæcologie for 1878, I had shared their doubts. On *à priori* grounds it seemed to me to be an occurrence wholly impossible. This author, however, describes a case which should, perhaps, be accepted as establishing the fact of its occasional occurrence, and his conclusion that it is extremely rare must certainly be agreed with. It occurred in the person of a woman of loose morals in whom the Fallopian tubes had become adherent, probably from gonorrhœal perimetritis. The left tube had remained permeable but was adherent, circumstances which probably explain the occurrence. At the outer extremity of the left ovary was a rounded body the size of a large cherry, and this contained a cyst filled by clear fluid. In this fluid floated a vermiform body, curved in the middle and swollen at one end. It was enveloped in an excessively delicate membrane by which it was fixed to the presumed chorion. That this was in the ovary is beyond a doubt, but that it was an embryo is by no means so clear. He quotes a case from Spreyberg which was most probably one of tubal gestation with the ovary attached to the cyst.

He lays down certain criteria by which the occurrence of an ovarian pregnancy might be established, but that they have ever been fulfilled I, for one, cannot accept. They are: (1) The absence of the corresponding ovary; (2) Union of the fœtal sac to the uterus by the ovarian ligament; (3) Presence of ovarian tissue in the walls of the sac; (4) The Fallopian tube must not take part in the formation of the walls of the cyst, and its pavilion must be distinguishable.

Adenoid hypertrophy of the ovary consists in an increase in size of the gland, by an excess of the ovigenous layer. The degree to which this layer is developed differs greatly in different women, and there can be no doubt that it is greater in the ovaries of our peasant population than in those who suffer more from social advance,—a fact which may be taken as a partial explanation of the comparative frequency of sterility in our

town population, and especially in the middle and upper classes. All animals seem to become less fertile in confinement and under domestication. Ovaries of large size are sometimes found where the increase is in the gland tissue, yet where the woman has been infertile, a combination suggestive of the conclusion that the nuclei of the vesicles have not become mature. Simple adenoid hypertrophy is never of itself sufficient to demand any surgical treatment.

Tumors of the ovaries have of late years attracted a great deal of attention on account of the great surgical triumphs which have been achieved by the establishment of ovariotomy as one of the most successful of the major operations. But besides this, there is an interest attached to the pathological study of these tumors which is not surpassed in the case of any other forms of growth.

The pathology of ovarian cysts involves a number of questions which have been raised and discussed by observers of the greatest eminence; but, up to the time of writing this, I have found little that has either harmonized with my own observations, or seemed to me to give any very satisfactory explanations of the growths. I have had opportunities of examining a large number of tumors removed in the operation of ovariotomy, and I have come to some conclusions which are at variance with those of many observers, but which, nevertheless, seem to me to be founded on fact, and to have at least this recommendation, that they simplify mattery very much.

First of all, we may dismiss what we know of the causes of ovarian dropsy in the confession that we know very little about them. The most common form, the adenoid or proliferous, and also the rare multiple tumors, occur during the period of life when ovarian cell-growth is mature; the more rare unilocular cystic growths arising in the neighborhood of the ovary, besides being met with during this period, occur at the extremes of life; for I have seen one at nine years of age, and I have had under my care a unilocular tumor in a patient aged seventy-two. I have also removed a tumor from a lady aged sixty-six, which, though it was composed of several sacs, I have placed under the category of the unilocular tumors, for reasons which I shall afterwards discuss.

I have not yet met with a unilocular tumor which was ovarian, and I hold that all unilocular tumors in the neighborhood of the ovary are not of ovarian, but of parovarian, origin. The parovarium consists of a few closed linear sacs, the remains of the tubules of the Wolffian body in fœtal life, which may readily be seen on holding the broad ligament, with the ovary and Fallopian tube in situ, up to the light. These tubules frequently contain a perceptible amount of fluid, and I have repeatedly seen them, accidentally in post-mortem examinations, distended to the size of beans or filbert-nuts, and have disregarded them as "Wolffian sacs" of no pathological importance. Three years ago, I had occasion to make a medico-legal examination of the body of a woman far advanced in life, and I found in her left broad ligament a cyst as large as an orange, filled with clear limpid serum. It was pressing upwards and backwards out of the pelvis, the ovary being at its lower and anterior aspect, and the Fallopian tube arched over its anterior surface. On the side next the uterus, two smaller cysts were lying close to it, and, nearer still, a very minute sac, which was evidently, by shape even, a distended parovarian tubule. The ovary was white, puckered, and shrivelled, and had not a continuous relation to any of the cysts, though it touched the largest

at its hilum. The Fallopian tube was normal, and had no other relation to the tumors than slight connection by loose areolar tissue. There was in my mind no doubt that this was a pathological indication of value; for in an ovariotomy that I had performed not long before, I was struck by the fact that the ovary was perfectly healthy and separated from the tumor, as was also the tube, by a mesovarium of some extent; in fact, I did not do ovariotomy at all in the removal of the tumor, for, in passing the chain of the écraseur round its base, I did not include either the tube or the ovary, and they were both returned into the abdominal cavity.

The consideration of these facts led me to examine some tumors I had removed previously and others removed by friends, and I have since subjected specimens to careful examination for confirmation of my accidental observation. The result has been that in every truly unilocular tumor I have found the ovary unaffected, though on several occasions I have seen it stretched over the cyst-wall. I have three or four times observed the ovary separated from the cyst by a more or less distinct mesovarium, and on one occasion I found in that fold some unaffected parovarian tubules in the case of a lady, a patient of Mr. Hall-Wright, from whom I removed a large unilocular cyst about eighteen months ago. In another instance, the healthy ovary was left at least an inch below the clamp; and in a third, to which I have already alluded when speaking of adhesions, the ovary and tube were found glued on to the cyst, but forming no part of it. In this cyst the walls were extremely thick, and contained large quantities of involuntary muscular fibre—a fact which I do not think militates against my view that it was of parovarian origin; for nucleated muscular fibre-cells exist in the broad ligament to some considerable extent, and myomatous tumors are found occasionally within its folds.

The case to which I have alluded as presenting a tumor with many cysts, but which ought to be placed under the same category as the unilocular cysts, occurred in the person of a lady aged sixty-six. She was a widow, having been married forty-three years before the tumor appeared. The menses had ceased for nearly twenty years, and her youngest child was aged twenty-five. There was every reason to believe, therefore, that the condition of the cell-growth of her ovaries would be one of very low activity. The tumor was first discovered about five years before I saw her, and had grown slowly for four years and a half, but with extreme rapidity for six months. The abdominal parietes were very thin, and the percussion-wave was communicated with extreme and uniform rapidity in every direction. I diagnosed, from my former experience, that it was a unilocular Wolffian cyst, and that the ovary would, in all probability, be found uninvolved. I was right about the ovary, for that was found, along with the tube, almost undisturbed, and not in any way involved in the tumor, the latter having apparently escaped from between them backwards and upwards. I had made a mistake, however, about the tumor being unilocular, for it was composed of five or six sacs. The walls of these were very peculiar, in being of uniform thickness, or rather thinness, for they were like tissue-paper, and had no thickening towards the base of the tumor, as is always the case in the multicystic adenoid or multifollicular tumor. My belief was, and is, that this tumor was a specimen of dropsy of a number of the parovarian tubules; for, if one alone may become dropsical, there can be no reason why a number should not be so coincidently. My opinion has been greatly strength-

ened, however, by a re-examination of the tumor for the special investigation of one point drawn attention to by Dr. Bantock; that is, the possibility of separating the outer coat of the tumor. This can readily be done towards its base for a short distance up from the ovary, discovering the fact that the gland and its duct can be stripped off the tumor without damaging its walls. The rapid growth during the later periods of its existence, however, seems to have so stretched the walls, that, beyond two or three inches from its base, the peritoneal layer cannot be separated from the cyst-wall proper. I have quite satisfied myself that this case is really one of multilocular parovarian tumor; and I am confirmed in this view when I find that Dr. Bantock refers to a case of Mr. Spencer Wells's, which the great ovariotomist recognizes as one of biloc-ular parovarian cyst.

Considering this, it is a point for investigation whether or not the curious little pedunculated cyst, representing the terminal bulb of the Wolffian tube, and generally known as the organ of Rosenmüller, may not sometimes form a unilocular tumor of morbid size, and be removed as an ovarian growth. In one case I have removed it during an ovariotomy on account of increase in its size. All these rudimental structures are lined with epithelium, and may, therefore, conduct themselves as other tubes so provided are known to do.

I do not mean to assert that such a thing as a unilocular tumor of the ovary proper may not occur, but I am certain that, in my experience, it has not been met with; and before such a tumor is accepted, the specimen must be rigidly examined to ascertain whether or not the ovary is involved. I have seen a patient fifty-two years of age, who had ceased menstruating for two years before the discovery of the tumor, where I diagnosed a unilocular tumor; but when I came to operate, I found at the base a large number of minor cysts representing the ovary, from one of which originally, I have no doubt, the major cyst was developed. I believe that at the base of all the unilocular tumors which are really ovarian, minor growths will be found that will substantiate the true origin of the tumor.

This leads me to speak of a variety of tumors, the origin of which has been fully traced by Rokitansky and Ritchie, and with an example of which I have been fortunate enough to meet, thereby having been enabled to confirm their observations.

I cannot here enter into full details of the curious and most instructive case to which I now refer, for they have formed the basis of a paper elsewhere. (See Obstet. Soc. Trans., Vol. XV., and chap. on tubal pregnancy.) It will suffice to say that it occurred in the person of a hospital patient from whom I removed both ovaries. Both tumors were multilocular, and had one or two major with innumerable minor cysts, graduating down to the most minute size. The fluid contents of all were limpid, and what was evacuated from three or four cysts at the time of the operation, together with the solid masses of both tumors, did not weigh quite ten pounds. The right tumor seemed to be about one-fourth larger than the left, so that they were probably four and six pounds in weight respectively—small-sized tumors. Both pedicles were included in one clamp, and the patient made an uninterrupted recovery.

After removal, the most careful examination of the tumors failed to discover any remnant of the ovaries outside them, nor did I find any trace of either of the Fallopian tubes. The tumors were pearly white and

glistening; but the thin parts of the major cysts had a peculiar transparency that I had never noticed in any other tumors before, and columnar bands stood out here and there in relief on the walls. I may say that the tumors had been of extremely slow growth: for I had had the patient under notice for nearly a year before the operation, and had not discovered any increase in the size of the tumors, though they had been in existence probably five or six years.

The interiors of the large cysts were lined with regular pavement-epithelium, and the walls seemed composed of fibrous tissue with some nucleated fusiform cells, probably involuntary muscular fibre. The smaller cysts were densely packed together, and at some places where they were of a uniform size, the tumors had much the appearance of huge white raspberries. I was struck with the resemblance the tumors presented to what I recollected of those in which Rokitansky and Ritchie had found ova, and I at once turned to Dr. Ritchie's admirable monograph and found that the tumors answered the descriptions completely. I therefore examined the contents of as large a number of the cysts as I could, and in every one, I think without exception, I found more or less distinct remains of an ovum.

It will serve my purpose best to quote at length from Dr. Ritchie's book, for our experiences are almost identical, and he also gives the observations of Rokitansky.

"In the first volume of the *Wochenblatt der Zeitschrift der K. K. Gesellschaft der Aerzte zu Wien*, Rokitansky describes the appearances observed in the post-mortem examination of a woman, twenty-six years of age, who died with diseased ovaries. Both ovaries were affected. The tumor on the right side was as large as a child's head, that on the left as large as a man's fist. Both ovaries were composed of a number of cysts as large as a cherry, which for the most part lay closely packed together, here and there had become flattened by mutual compression, and occasionally even projected into each other. The surfaces of the tumors were thus slightly lobulated, and between the protuberances were seen, at intervals, cysts as large as a barleycorn, a pea, or a bean. These latter cysts, on being punctured, gave exit to a greenish-colored fluid containing membranous flocculi, and in all of them the ovum was found. In each of them, however, the ovum was softened, very dull-colored, easily disintegrated. The zona pellucida had for the most part lost its sharp contour, and, except in one case, no germinal vesicle was discoverable.

"As far as I am aware, this observation of Rokitansky was never publicly confirmed until July, 1864, when the reporter to the *Medical Times and Gazette* of four cases of ovariotomy performed by Mr. Spencer Wells in the Samaritan Hospital, mentioned that, in two of the tumors removed, Dr. Webb and myself had been fortunate enough to discover many ova.

"The patient from whom the tumors in question were removed was fifty-four years of age, and had been for some time suffering from double ovarian disease. The tumors were easily extirpated, and the patient recovered. Each tumor was of the size of the head of a child four years of age. Each contained several large central cavities, and a number of smaller ones in the wall of the central cavity, the wall itself never exceeding one inch in thickness. In the *Medical Times and Gazette* for August 6th, 1864, Mr. Spencer Wells wrote as follows:

"'The two tumors in question were examined directly after their

removal by Dr. Ritchie, who pointed out to me, in each of them, a number of small cysts, which were evidently enlarged Graafian follicles. Knowing the great and long familiarity which Dr. Woodham Webb has had with the ova of various species of animals since his researches in conjunction with Barry, I asked him to examine some of the cysts, in order to ascertain whether they did, or did not, contain ova, knowing that on this point no higher authority could be appealed to.

"'As one friend has suggested that we may have mistaken a blood-corpuscle for an ovum, there was evidently some reason for my caution; but I trust that the following note from Dr. Webb will set all such doubts at rest:

"'"Both the tumors you sent me, after their removal from a woman fifty-four years old, were growths in excess of true ovarian structure. The multilocular character was produced by clusters of ovisacs of various sizes. Ova, with the other natural contents, were to be found in all the small sacs. The fibrous coats of the larger sacs were thickened, and had many other secondary sacs developed in them. The interior was lined with epithelium, which in some instances had, by parthenogenetic enlargement and successive budding of the cells, given rise to bunches of grape-like growths, repeated generations of imperfect ova."

"'The whole, then, was nothing more than a reproduction in the human subject of conditions which are natural in some of the lower creatures. I suppose the description, in your orthodox pathological terms, would be, "hypertrophy of the ovaries, with arrested development of the contents."'

"This letter, coming from a gentleman of Dr. Webb's known experience, is of great interest. Dr. Webb evidently inclines to the belief that the ovum is only an altered epithelium-cell. He also seems to believe that the grape-like growths, those described further down as dendritic growths, are repeated generations of imperfect ova."

Dr. Ritchie's unfortunate death, and my want of acquaintance at that time with Dr. Webb, hindered me from becoming acquainted with their method of manipulation; but that which I devised for myself answered my purpose completely. It consists in slitting open the cyst freely with a cataract-knife over a conical glass, collecting the whole contents, and afterwards syringing out the cavity of the cyst gently with a solution of sulphate of magnesia in distilled water of a density something near that of the cyst contents. The fluid with which the cyst is syringed out is allowed also to fall into the vessel, and the whole to stand for a few hours, at the end of which time a little flocculent sediment will have collected at the bottom of the vessel. This is to be carefully lifted by a pipette, deposited in a clean watch-class, and the ovum searched for under the microscope. What I found in every case I could not, of course, assert as an ovum; but having found one or two specimens about which there could be no doubt, and in every case something that was more or less like one, I am perfectly satisfied that in those tumors every cyst was a dilated ovisac. The smaller the sac, the more perfect the ovum seemed to be, and consequently I assumed that these were the more recent growths. Not only were these dilated ovisacs in the periphery of the tumors, but they were found throughout its substance. In fact, it seemed to me as if, for a long period of her ovarian history, the ova had been garnered up in cysts instead of being shed in the usual manner. Her youngest child was six years old, and if we assume that an ovum is shed

from each ovary monthly, then we should get the number of ova so retained as about one hundred and fifty. The number of cysts was, however, much greater, probably two or three times as many; so that we may choose between two explanations—either that the tumors had existed before her last pregnancy, or that more than two ova are shed in the month. My own belief is, that both these suppositions are correct; for, when speaking of ovulation at the beginning of the essay, I gave reasons for my belief that ovulation and menstruation had only a connection of coincidence. I am of opinion that ovulation takes place far more frequently than menstruation does.

It is a somewhat singular fact that the observation of Rokitansky has not been confirmed, as far as I have yet seen, by any others than Ritchie and Webb, and by my own case. Still more curious is it that all three cases are almost identical, presenting small multilocular tumors of slow growth, and that in all three cases both ovaries were affected. This inclines me to believe that in these cases we have to deal with a special kind of ovarian tumor, occurring rarely and differing from the ordinary adenoid growth. Whether this be so or not, further experience alone can show. Dr. Ritchie says, immediately following the quotation I have given above, that he subsequently succeeded in finding ova in some of the loculi of a large number of ovarian cysts, but never in a loculus larger than a cherry, nor in one that had jelly-like contents. This observation I cannot confirm; for, though I have made many searches in the endogenous and subjacent secondary cysts of ordinary polycystic tumors, I have never found an ovum or anything resembling one. Perhaps my method is defective. Dr. Ritchie further says that, when no ovum is to be found, a single minor cyst is to be seen embedded in one part of the wall, and he has thought himself justified in concluding that this appearance represents dropsy of the blastodermic vesicle. I have certainly seen such vesicles in the walls of small cysts, but I have as often found them multiple as single, and I have never seen reason to interpret them as Dr. Ritchie has done. My view of the origin of such growths I shall explain afterwards.

There cannot be a doubt that there are some ovarian growths due to dropsy of the whole or the greater number of the ovisacs produced—a true follicular cystic degeneration; but it would seem that these growths are rare. Probably the instance described by Rindfleisch, and named by him struma ovarii, belongs to this class.

Partaking of the nature of the cysts last described, to some extent and in some way yet inexplicable, are the mysterious productions known as dermoid cysts. The term "dermoid" is not a good one, for it by no means gives expression to a constant character of these tumors. Sometimes there is no trace of any epithelial products at all; whilst we find bones, muscle, and brain substance even, according to Beneke, in some of them. In one which I removed in 1878, Miss A. E. Clark found abundance of ciliated epithelium, closely resembling the epithelium of the ventricles of the brain. The name, however, is hallowed by tradition, and it is not easy to coin a better one.

That these tumors are the result of change in an ovum is about the only part of their history regarding which there can be any certainty. But there may be doubt as to whether the abnormality takes origin in an ovum of the individual bearing the tumor, or in the ovum from which she herself was developed; in other words, whether the tumors are abnormally developed ova or are due to inclusion. That they have any origin in im-

pregnation, we may at once dismiss as excluded from serious consideration, since they have been frequently found in newly-born children, and their most common seat is in the ovaries of young women, chiefly, according to Mr. Spencer Wells, of fair complexion.

The question of their origin, then, lies between the hypothesis of an effort on the part of some over-active ovum in the direction of parthenogenesis which has been based by Dr. Ritchie on Blumenbach's less scientific and more scholastic expression of "excess of formative nisus," and the equally hypothetical process of inclusion. As far as we know anything about inclusion, it follows the usual law of teratology, that any attached individual, whether developed or blighted, is symmetrically connected. Thus the Siamese Twins and the Millie-Christie monstrosity have the attachment in similar and identical structures, the one to the other (see Vrolik, Von Baer, &c.). I have seen nowhere on record that any fœtal remains have been found attached to an ovary, or situated in an ovary in any way which could find it a classification under this law. The tissues met with are always rudimental, and such as, while they are the product of the ovum after conception, have no anatomical analogy whatever to the tissues of the ovary. I am disposed, therefore, to set aside entirely the view of their origin by inclusion, as the ovary is about the most unlikely structure in the embryo for such a process; and, if they had their origin in such a way, we ought to find dermoid cysts in the testicles of the male quite as often as in the ovaries of women.

There is only left, then, the explanation that dermoid cysts are the result of an altered nutrition of one or more ova; and, if I may lay down a dogma from my own dissections, I should say, of one ovum only. Dermoid cysts are generally unilocular, and, when they are not so, it is not difficult to show, as has been done by Dr. Ritchie, and has been evident in one or two specimens that I have examined, that the secondary cysts are formed by the mother cyst being partitioned off by the growth of ridge-like walls on the inside of the cyst.

The occurrence of cysts having a structure somewhat resembling the dermoid cysts of the ovary in other parts of the body, especially in the neighborhood of the orbit, has led to confusion in the discussion of the origin of the ovarian cysts. In the orbital cysts we have only aberrations of the normal process of the involution of epithelium from which the structures are developed, and there is no mention, as far as I can find, of these extremely small congenital cysts, which never enlarge in after life, having been found to contain anything but purely epithelial products, such as hair, dead epithelial cells, and fat. In ovarian cysts, however, the variety of products is so great, as to put all analogy between them and inclusive cysts out of the possibilities. Thus, in one ovarian cyst which I examined under the direction of my friend and teacher, Dr. Grainger Stewart, many years ago, in the substance of a wall between two loculi, were spread out flat bones which were undoubtedly some of the bones of the skull, and near them could be felt the representatives of the bones of a limb arranged in order. True bone is frequently found in ovarian cysts, and in some that have in them no dermoid structures at all.

Sir James Paget refers to a remarkable specimen in the Museum of St. George's Hospital, which exhibits a mass of fatty matter and a lock of dark hair, one and a half or two inches long, attached to the inner surface

of the dura mater at the torcular Herophili, found in a child two and a half years old, in whom it appeared to be congenital. He adds, in a foot-note, that Dr. John Ogle, who had carefully examined the specimen, and described it to the Pathological Society, was of opinion that the cyst was originally of extracranial formation, but that, at an early period of fœtal life, before ossification of the occipital bone had taken place, the cerebral membranes and scalp had become adherent, and that, as the development of the bone went on, the outer integument was drawn in by retirement of the cerebral membranes. In this way some of the cutaneous structures had become included within the cranium. He considers that the cyst possesses characters which warrant the above supposition, and he adds that, in a similar manner, cysts within the orbit may extend into the cranial cavity. No such explanation could include the phenomena of the ovarian tumors which contain such structures as teeth, bone, cartilage, striped muscular fibre, brain and nerve tissue, &c. The true solution can only be found in a hypererchetic development of an ovum, a cell which has in it the power of formative origin of all these structures. The process of growth of the ovum after impregnation can be followed only after the assumption, either expressed or unconsciously accepted, of such a hypothesis as is contained in Mr. Darwin's "Pangenesis." The germ contributed by the male contains, we know only to well from pathological experience, gemmules having certain powers and functions; and we may therefore assume, as indeed we also know, that the female germ contains also such gemmules. It may be that the ovum has in it the origin-buds of certain tissues, and that, under exceptional hypererchetic action, they may go on to the rudimental formation of these tissues without a fusion with the male germ. More careful and accurate description of what is found in dermoid cysts may help to solve this riddle; still better, perhaps, a careful consideration of what tissues are not found in them.

This doctrine of hypererchesis is supported by many facts which have been observed in cases where the changes in the ovum can be watched outside the body of the parent. Thus Bischoff and Leuckhart have both described partial development of ovules which have been placed beyond the possibility of impregnation. Moquin-Tandon has, more recently, described analogous facts before the Academie des Sciences, amongst which he gives details of the process of segmentation in the ova of a frog which had been kept in confinement for four months. There were first noticed two large vertical fissures in the ovule, followed soon by similar horizontal segmentation, and this process of division proceeded further, but in a less regular manner than usual, the yolk spheres multiplying irregularly, and becoming of unequal size, and it was more rapid than in fecundated eggs which were allowed to develop at the same temperature. Only a small number of the ova presented this evidence of commencing development, for the majority died without any sign of segmentation. Sometimes death occurred after the division into two or four segments, sometimes at

a more advanced period, but the ovule never assumed the mulberry appearance. The author considers that this incontestably proves that the ova of vertebrata, not impregnated by spermatozoa, may pass through the earliest stage of development in certain conditions, the exact nature of which is at present unknown. It seems to me that we may take this process to be exactly what occurs in the development of the spore of the fern into the prothallus, and the tendency which these unfertilized ovules have to this primitive and ineffectual development is derived from the continuity of descent. In the insecta the process is carried much further, for Balbiani exhibited some eggs of the silkworm moth to the Société de Biologie (1873), which had been deposited before fecundation could have been effected. A certain number of these eggs remained sterile, but others showed signs of development, though in no instance had the larva escaped from the egg. The number of these developing eggs varied extremely according to the species of moth by which they were deposited. The largest number was met with in those which produce several generations per annum. Amongst 9000 eggs of a polyvoltine race, 513 developed spontaneously; whilst of 50,000 of an annual race, 29 only were fertile. M. Balbiani thinks that this enormous difference is probably due to the feeble vitality of the egg in the annual races, a suggestion which cannot be considered in any way as an explanation; neither can his idea be entertained that the parthenogenetic development is to be accepted as proving the hermaphroditism of the egg, for there is no evidence whatever of such a condition. What has been observed by Balbiani is indeed only an attempt to fulfil the conditions seen in the aphides, where the cell multiplication in the pseud-ovaria produces a new individual without any sexual congress. Putting these facts along with others observed by Agassiz and Burnette in fish, by Hensen in the rabbit, and by Bischoff in the sow, I do not think that there is any difficulty in believing that the hypererchetic efforts of the human ovum which result in the formation of those so-called dermoid cysts, are parthenogenetic, and have originated in the early phases of our ancestry. These processes are carried further by an abundant blood supply.

Sir James Paget has, it seems to me, struck the key-note of the pathology of dermoid cysts when he wrote, "It is, perhaps, only during the vigor of the formative forces in the fœtal or earliest extra-uterine periods of life that cysts thus highly organized and productive are ever formed." A most important point in the pathology hangs on this sentence, and can be decided only by a determination of the age at which such tumors are most frequently found. It is, of course, evident that the ages at which these tumors are removed by the operating surgeon cannot be taken into account, as they are of slow growth, and have often been recognized as being present for many years without perceptible increase. They are quite unlike, in this respect, the ordinary adenoid tumors. Their contents even show that their existence must often have been contemporaneous with the life of their bearers; for we find large balls of hair, the result of the epithelial growth and shedding of a nipple-like process not bigger than the tip of one's finger; and in one sac over three hundred teeth have been found, resembling in many respects milk-teeth; so that we may reasonably suppose that they were the repeated products of a limited dentigenous area. In one of Mr. Spencer Wells's cases, the preparation of which is in the Hunterian Museum, a piece of bone was found resembling greatly a part of the upper maxilla and sphenoid bones, and containing mature molar teeth. In fact, inspection of the specimen almost carries conviction to

the mind that the bone and tooth-sacs were produced at an early, perhaps intra-uterine, period of the life of the patient, and that they grew and matured as she did till the tumor was removed, at the age of 39.

Dermoid and dentigenous cysts have been so frequently found in children, that it may be suspected that if the histories of all such as are removed by operation could be traced, they would be found to be, as Paget suggests, either congenital or originating very early in life. Indeed, it seems to me to be impossible that it can be otherwise when we remember how soon after birth all processes of development must cease, and those of growth alone are continued; impossible that new tissues, so strange and displaced, should be developed after the formative powers have ceased to produce new tissues in normal positions. The more we know of pathology, the more we find its processes resemble those of physiology; and it seems to me far more simple to explain the occurrence of dermoid cysts in the ovary by hypererchetic action of an ovum at the time of life when such processes are in vogue in the economy, than at some other time when they have entirely ceased everywhere else. I have already shown that the formation and destruction of ovarian cells goes on from the earliest to the latest times of existence, the degree of their maturity varying with the periods of life. Fully dilated Graafian follicles have been seen in the ovaries of newly-born children, containing ova which are minute, transparent, and structureless cells. But let us suppose that, during the developmental period of life, some stimulus be given to one Graafian follicle and its contained ovum, which for want of better knowledge we shall call accidental, and that this should lead to the premature maturation of the ovum, so that, were the rest of the organism ready for the process, it might be carried into the uterus and then be impregnated. Let us further suppose that, instead of being destroyed by rupture of the ovisac, it should remain in the ovisac and share alike with the rest of the economy in developmental activity, there could be only one result, and that would be the formation to an incomplete degree of those structures which it would evolve in perfection under more favorable conditions.

In support of my supposition, I may draw attention to a description further on of a dermoid cyst which I found in the peritoneum with attachments to its surface, but without connection to either of the ovaries. This tumor was so intimately and so extensively adherent to the peritoneum that I had to leave it, and I had reason to believe it had no ovarian connection. Might not such be developed from an ovum which had escaped from the ovaries in early life, and become attached to the peritoneum, as we know they do in after life, and there have carried on its attempt at parthenogenesis?

The logical conclusion of this view is, that if such an ovum could get into the uterus after its escape, it would develop into a perfect instance of parthenogenesis—a speculation, of course, but no wilder than some of the facts of embryology seemed to us before we understood them. It is in fact quite analogous to the production of the aphis by a virgin and sexless larviparous mother.

Whatever be the value of the suggestions I have thrown out, they are certainly consistent with my own clinical experience; for in one case where I removed a dermoid cyst from a young woman, there were many reasons for believing that it had existed long before puberty. The oldest patient from whom I know that a dermoid cyst has been removed is a case of my own, the woman being in her forty-fifth year. The tumor weighed only six and a half ounces, and was full of hair, which had grown and

been shed from one little spot of skin not bigger than the tip of my little finger. The amount of hair in the sac, had it grown from a similarly sized area of scalp, would have taken almost a lifetime to grow and be shed. In Mr. Wells's oldest case (38), the tumor had been recognized for eighteen years; and, in a case (37) not operated upon, but examined after death, the tumor had been known to be in existence for at least twelve years. The usual age for dermoid cysts to come under the notice of the surgeon is from seventeen to twenty years, and then it is generally certain that they have been long in existence. After puberty, the recurrent congestion of the whole sexual apparatus must stimulate into growth what is in readiness for it after having been developed long previously, as I have suggested in my hypothesis. The results of that development may remain of minute or even microscopic size, until the stimulus of the menstrual hyperæmia so increases them as to make them of surgical importance; just as Hunter's celebrated experiment of the transplantation of the spur of the cock into his comb resulted in an extraordinary increase in length and size of the spur by the altered character of its hæmic nutrition.

Briefly, then, I believe dermoid cysts to be the result of hypererchetic development of an ovum in fœtal or infantile life, growing into a tumor during and subsequently to puberty. They are always invested by the ordinary peritoneal covering of the ovary, beneath which is a more or less thick layer of the nucleated and banded fibrous tissue, which forms the basis of all ovarian cysts. I have seen this layer as thin as tissue paper, and in one old-standing dermoid cyst it was more than an inch thick, and occupied by large plates of calcification. In it are to be found the same fusiform nuclei which characterize the stroma of the ovary, only they are more sparsely distributed. Within this layer the peculiar structures met with in dermoid cysts occur, an arrangement strongly indicative of the method of origin which I have suggested for them. I do not know of any tissue in the body which may not find its representative in them, for Beneke has even found brain substance. Usually, however, they have an epithelial character, and in some instances show great advance both in development and growth. When skin or mucous membrane is present, all the details of their structure may be made out; and as there is no vasomotor check on the vascular supply, the materials which they secrete normally are often found in vast quantities, as, for instance, hundreds of teeth, and pounds of sebaceous matter.

Of the modes of origin of the other forms of ovarian cystic tumor, many ingenious explanations have been given, though not one has yet met with general acceptation; indeed, all are too vague and incapable of ready demonstration to commend themselves to practical minds. For this reason, I think it needless to recapitulate even briefly the various views of the pathology of adenoid ovarian cysts which have been recently advanced. I retain the term adenoid, because it conveniently classes the tumors by reference to the tissue from which they originate, and by the hyperplasia of which they are formed, without giving any theoretical explanation of their formation. All non-cancerous tumors of the ovary are, therefore, adenoid; even the dermoid tumors are so to a certain extent, for they are the result of increased growth of one or other normal constituent of the gland, without alteration, save in quantity. Cancerous growths, on the other hand, introduce tissue which is either not found in the gland normally, or they produce it in a form which is immature.

There are two methods of origin for pathological cysts which are universally accepted, and both of which are instanced in the ovary. The

first is by occlusion of normal ducts or tubes, as best seen, perhaps, in the kidney and salivary glands, and in connection with the ovary in the form of cystic dilatation of the Fallopian tube or of its trumpet-shaped extremity, after adhesion to the ovary—tubal and tubo-ovarian cysts. The other form of cyst-growth consists in the dilatation of a physiological cyst-cavity by its own secretion poured out to an abnormal extent; and this secretion may either retain its original character and constitution, or be altered by the addition of blood or of some of its usual or exceptional albuminous products. This is the common form of cyst-formation in the ovary; and, in the multiple adenoid tumor and in the dermoid, we have already seen instances of it. The former illustrates the formation of cysts by the retention of its products in the cavity of the normal sac of the gland, these products being the fluid cell-substance and its nucleus the ovum. This is accomplished, as far as I could discover from the specimen I have described, by hypertrophy of the fibrous covering of the gland—a cirrhosis of the ovary; and the nucleus, the ovum, seems to have retained its normal appearance until destroyed by prolonged maceration and pressure. It is, however, possible that some defect of action in the nucleus may have to do with the non-rupture of the sac; for, under healthy conditions, it is undoubtedly the maturation of this nucleus that governs the rupture of the wall of the ovisac, and enables the perfect ovum to escape.

The dermoid cysts, I have suggested, are due, on the other hand, to an altered and increased activity of the cell-nucleus in early life, the results remaining latent for years, until re-excited by the great systemic change. We may look, then, to some other altered condition of the cell-elements for explanation of the remaining variety of cystic tumor of the ovary which has been termed by Mr. Wells and others "proliferous."

I do not like this term as applied to the compound cysts of any kind, for it assumes, what I am quite certain is not true, that the large cysts are directly the parents of the small ones. Thus Mr. Wells, at page 25 of his book on Diseases of the Ovaries, defines: "Proliferous cysts—parent-cysts with secondary cysts growing from the interior of the cyst-wall." These minor cysts are secondary, as far as date of growth is concerned; but they are the younger brothers and sisters, not the children, of the larger sacs. In fact, the very caution which Paget gave his hearers in using the term *proliferous* is disregarded in such an application of it, as may be seen from the following quotation:

"In an ovary, it is not unfrequent to find many small cysts, formed apparently by the coincident enlargement of separate Graafian vesicles. These lie close and mutually compressed, and, as they all enlarge together, and sometimes, by the wasting of their partition-walls, come into communication, they may at length look like a single many-chambered cyst, having its one proper wall formed by the extended fibrous covering of the ovary. Many multilocular cysts, as they are named, are only groups of close-packed single cysts; though, when examined in late periods of their growth, and especially when one of the groups of cysts enlarges much more than the rest, it may be difficult to distinguish them from some of the proliferous cysts." (Paget's Surgical Pathology, p. 415.)

The formation of a compound cystic tumor in the ovary, whether it be of the multiple variety or of the less complete kind of which I am about to speak, may be very well illustrated by blowing soap-bubbles in a basin. If the fluid be not viscid enough to enable the bells to retain their form, then the normal condition of the ovary is represented, its cells bursting and disappearing. Let us suppose that the cell-growth is constantly

going on, and that some alteration occurs in the state of matters which prevents the cell-walls bursting; the fluid in the basin is so viscid, that the bells do not break, and bubble after bubble is formed, some larger, some smaller, until a large multicystic tumor is the result. The actual appearances of the cystic ovary may be very well imitated in the basin of soap-lees. A large cyst can be made with little ones crowding into it, looking like its offspring, and the walls between two or three may be broken down, making one larger multilocular—the remains of the intervening walls not being left in the instance of the soap-bubbles. If they had been left, the appearances would be identical with what is represented diagrammatically for ovarian tumors in Mr. Wells's book on page 39. In the ovary, we have the continual production of cells, representing the continuous blowing of the bubbles; and we have only to discover what it is that is analogous in the ovary to the increased viscidity in the solution of soap; what it is that keeps the cysts in their entirety, perverting a physiological into a pathological process.

I have already said that I have failed to find anything like ova in any cysts of the tumors I have examined, except the one which I have described; and I have mentioned that I have not seen any reason to believe that the little secondary cysts met with in the walls of some of the larger sacs are what Dr. Ritchie has interpreted them to be, dropsy of the blastodermic vesicles; chiefly because I have failed to see round them anything like remains of the membrana granulosa, and I have seen three or four of them on more than one occasion on the wall of the same sac. In searching for ova in the cysts of the two tumors where I found them, I had seldom occasion to look for them in the walls of the cysts, as they seemed to have been floating about loose, or to have been set free by the opening of the sacs. In other cases, not finding them by the method I have already described, I adopted the further plan of first isolating the cyst to be examined, and, having opened it, I searched carefully in every sediment of its contents for the ovum. Not finding it, I turned the sac inside out over a ball of cotton-wool soaked in glycerine, smeared its everted surface with the same substance, and, covering it piecemeal with a thin glass, I carefully examined it over its whole extent by reflected light. I never found anything I thought was an ovum. In one tumor which I removed lately, I found a mass of secondary growth in the position of the ovary at the base of a single large cyst. I made sections of this mass by the freezing process, and found it composed of follicles all lined with their proper epithelium and undergoing cystic enlargement, but in none was there any trace of an ovum.

I cannot reconcile this discrepancy between my observations and those of Dr. Ritchie otherwise than by supposing that, having been one of the discoverers of ova in a certain kind of ovarian tumor, he was too anxious to apply his principle of explanation to all; or he must have had a plan of examination more successful than mine.

The fact that I never found ova in any of the sacs of these multicystic tumors, even the smallest or in those with the most limpid contents, led me to entertain the opinion that in this we have an explanation of their formation. The function of the ovary is one of cyst-formation from its earliest existence to its latest, and in its pathology we need not go far away from its physiology. It seems to me, therefore, *à priori*, very unnecessary to resort to the ingenious explanations of cyst-formation advanced by Dr. Wilson Fox, though they may be fitted to exceptional cases. Experience in the examination of the growths themselves has

strengthened this view; for my wonder is greater the more I see of them, that they do not occur more commonly and with more complexity than they do, considering the apparently reckless amount of ovarian cyst-production that goes on throughout life.

The aim and object of this cyst-formation is the production, maturation, and discharge of the ovum. But if the ovum be not formed, or if it be produced only to a rudimental extent, may it not happen that the cyst will not be ruptured, but go on aimlessly expanding? Whatever be the source of the change, we know that it does not affect one ovisac alone, but may influence them in great numbers, whether it be in a tumor where the ova have been matured and subsequently prevented from escaping by sclerosis of the coat of the ovisac, or in a growth where the ova are not to be found. There is a great clinical difference between these two kinds of tumor; for in the one the growth is very limited and slow, and in the other it may be, and often is, extremely rapid, and is practically unlimited in extent. In fact, the growth of these cysts without ova partakes somewhat of the character of malignancy, assigned to them originally by Bright for clinical reasons. Malignancy, apart from any association with cancerous structure, is always indicated histologically by a tendency to the production of a form of tissue which is young and immature, and this is certainly the condition of these ovaless ovisacs.

In one tumor which was sent to me for examination by Mr. Spencer Wells, the stroma was so young and immature as to resemble very closely a myxomatous growth, or the canalicular structure of the umbilical cord. Indeed, if I had placed sections from these three structures under adjoining microscopes, I do not think that I have yet met with the histologist who could distinguish between them.

There is, in fact, a reversion to the premoliminal condition of the ovary, as far as the ova of the affected ovisacs are concerned. The whole ovary does not, of course, become simultaneously implicated, and matured ova may be given off by some ovisacs still unaffected and within reach of the Fallopian fimbriæ. Impregnation may thus occur from a degenerated ovary, though it is much more likely to occur from the one which remains healthy.

We have in these facts the reason that these adenoid tumors occur with greatest frequency during menstrual life, if indeed a future experience may not yet show that they do so exclusively. The menstrual congestion and excitement induces a dropsical distention and growth of a cell which would not be so perverted during childhood or senility, when its blood-supply would be sufficient only for passive nutrition.

The growth of cysts in the wall of the major sacs, appearing sometimes outside and sometimes within in great numbers, depends wholly on the relation of the original adenoid tissue to the cyst-wall; and, as that wall grew primarily in that tissue and surrounded by it, it would be indeed surprising if it did not carry along with it in its expansion some of the cells of the *couche ovigène* from which it sprang. These displaced cells have in their turn a stimulus for development, prematurely, perhaps, on account of the increased hæmic activity of their abnormal surroundings, due to the growth of the sac. They also go through the process of dropsical distention, developing no ovum, not rupturing, but becoming secondary cysts, perhaps ultimately to rival, or even to excel, that which has preceded them, on which they grew, and of which they have been supposed to be the offspring.

Sometimes these intra-cystic growths line the cavity of the major cyst

like an eruption of small-pox. In the case of a tumor which was removed by my colleague, Mr. C. J. Bracey, hundreds of little separate cysts lined the major sac of the tumor, as if the whole adenoid tissue had been spread on the inner surface as the cyst grew and were there degenerating; and I have no doubt that this was really the case, for these little cysts were all Graafian follicles beyond a doubt.

In some tumors we find velvety-looking tufts hanging from the walls into the interior; and these are found on examination to consist of a basis of nucleated fibrous tissue, in fact ovarian stroma, lined on each side of their many branches by regular columnar epithelium. As these structures divide and re-divide into branches, they very much resemble trees, and therefore have had conferred upon them, amongst other names, that of intra-cystic dendritic growth. If a cyst in which they exist be injected and the sections stained, they will be found to consist merely of the remains of follicles which have burst in their efforts to become cystic, the skeleton branches retaining the epithelium of the cysts which formerly were on each side of it. By the growth of subsequent cysts these papillary remains are often forced into irregular and very complex folds, the apparent complexity of which may be greatly increased by the accidents of the section.

I have failed to find any description of a cartilaginous growth of the ovary apart from cystic alteration, but I have twice found plates of cartilage in the walls of ovarian cysts, and in neither of these tumors were there any other structures which might place them in the category of dermoid cysts. The cartilage was composed of large cells with very little fibrous matrix; in fact, it was hyaline cartilage, identical with what I have seen repeatedly in the testicle. There is of course no good reason why enchondromatous tumors should not be met with in the ovary, just as they are in the testicle; but in the latter organ they occur independently of cystic degeneration, whilst I am not aware that they ever have done in the ovary.

Fibromatous tumors of the ovary must be very rare, for I have only met with two cases, one of which was malignant. Growth of the fibrous stroma of the ovary so as to form a large abdominal tumor requiring removal has not yet been described, so far as I have been able to discover; and under any circumstances the condition is a rare one, for Peaslee has collected only seven cases, including two which he had seen himself, and Atlee describes another which probably was of this nature, though unfortunately no microscopic examination of it has been recorded.

The patient in whom occurred the tumor I am about to describe was forty-four years of age, was very stout, had borne six children, and had been failing in health, owing to the increasing size of her abdomen, for about two years. She was sent to me by Dr. Vinrace in July, 1873, when I found the abdomen occupied by a large quantity of ascitic fluid, in which floated a large and perfectly solid tumor. The abdominal walls were also very œdematous. I tapped the abdomen and punctured the skin repeatedly with a lancet to get quit of the anasarca. This was repeated several times, until it was evident that only the removal of the tumor which I had diagnosed to be solid ovarian, would permanently benefit the patient. When the abdomen was opened, it was found necessary to extend the incision eight centimetres above the umbilicus, in all nearly twenty-five centimetres, before the tumor could be removed. It had an adhesion to a coil of intestine, and a very extensive adhesion to the great omentum, and it occupied exactly the relations of the left ovary,

the other being perfectly healthy. Its pedicle was clamped, and the wound closed in the usual way. The patient died on the fifth day. The tumor was round, smooth, and of a creamy white color, and it weighed almost nine pounds. When cut into, it had a glistening, white, and trabeculated structure; and it was perfectly solid throughout, there being no indication anywhere of cystic formation. A number of very thin sections were made, and these were treated by various processes, their uniform result being to show that the tumor really was the ovary, and that its overgrowth was limited to the fibrous stroma. The fibres were ranged in bands which crossed in all directions, and treatment by acetic acid showed that a few of these bands, or perhaps I should say a very few, were composed of muscular fibres, an observation which substantiates that of Sangali, quoted by Virchow, made in a similar but much smaller tumor. Throughout the tumor, but chiefly towards its surface, a number of minute cavities were observed, lined by epithelium, and having in one or two instances a large cell with a nucleus, presenting all the appearances of an ovum. The number of these cavities in a less pronounced condition was very large, and I have no doubt they were immature Graafian follicles.

The case of malignant fibroma was one which I saw in October, 1869, in consultation with Dr. Hollings, of Wakefield. She had a large oval tumor, solid, hard, and smooth, moving freely in the abdomen, centrally situated, with a similar smaller one to the right side. The larger tumor reached about two inches above the umbilicus, could be felt high in the pelvis, and had no attachment to the uterus. I diagnosed it as a case of solid cancer of the ovary, and declined to operate. The abdomen was free from ascites or other complication. I saw her a second time in a few weeks, and found that the tumors had both increased in size, and then, having made myself more familiar with the subject, I gave it as my opinion that it was an instance of the rarest of all forms of cancer—the fibroid. On December 5th, I found her with symptoms of peritonitis, and a considerable effusion of ascitic fluid. I tapped her, to relieve the breathing, and found a large soft semi-fluctuating mass extending from near the xiphoid cartilage to within three inches of the pubis, masking the outlines of the tumors. This I recognized as possibly a fungoid growth of the omentum. I tapped her again on the 9th, and she died next day. Twenty-four hours after death, I examined the body, and, on opening the abdomen, I found adhesions everywhere to the large deep-colored fungous mass which I had correctly regarded as growing from the omentum. It was adherent behind to the intestines and to the tumors. The larger of these latter was found to be perfectly loose, save from the omental mass and the right corner of the uterus, to which it was attached by a short thick pedicle; in fact, it was the right ovary, as no other trace of the gland could be found. The smaller tumor was similarly the left ovary, and a still smaller tumor seemed to grow from the same pedicle. Scattered over the surface of the peritoneum were patches very similar to those previously described in a case of cancer of the peritoneum. These patches were also found on the surfaces of the tumors, and were stripped easily off with their investing epithelial coverings. In the right or largest tumor were a few cavities containing fluid, and also some curious cretification at the base and in the pedicle. It weighed probably twelve or thirteen pounds, so that I could not remove it conveniently for preservation. I removed and carefully examined the smaller tumors, some peritoneum, with specimens of the patches and a piece of the omental fungus.

In the piece of omentum, nothing but blood-detritus, a few scant fibres,

and some irregular cells were found. The nodules on the peritoneum showed all the characters of cancerous tissue, being composed of large irregularly shaped and irregularly sized cells, containing variously shaped nuclei in varying numbers. There seemed to be no fibrous tissue in them at all, and their elements readily separated by gentle pressure between the cover and the glass slide. A careful section showed the epithelium of the free surface of the peritoneal layer to be undergoing interesting changes. The cells of the upper layer were normal; but at two or three layers' depth they were seen to be larger, more irregular, and the number of nuclei increased, the latter fact being most clearly displayed on the addition of acetic acid.

The ovarian tumors removed were ovoid, smooth, and glistening, and here and there the surfaces were marked with the peculiar patches above described. Together, they weighed nearly three pounds. When cut into, no juice exuded from them, and the scant moisture scraped from the cut surface showed no cells. The tissue was pearly white and very tough. Teasing with needles did not give any satisfactory results, and a great many sections had to be made before one thin enough for examination was obtained. I then found that the texture was purely fibrous, there being nowhere, under the epithelial layers, any cells discoverable. The fibres were extremely fine, closely and regularly packed, without any appearance of undulation or interweaving, but seemed to lie parallel with only faint curvings in their general direction. They were readily stained by carmine. Acetic acid showed no nuclei, and did not influence the fibres beyond a slight clearing of the section.

It will be found that this description differs in some important particulars from that given by Sir James Paget of similar structures, especially in the absence of nuclei; but the rarity of opportunities for the examination of such peculiar growths stands much in the way of their proper investigation.

I have never met with that rare variety of fibroma of the ovary, of which only three instances have been described, two by Rokitansky and one by Klob, and in which small fibrous growths arise from the corpus luteum. Neither have I seen any of the so-called osteomata; indeed it is greatly to be doubted if any true osteoma has ever been found in the ovary, except as part of a dermoid cyst. All the others, of which I have seen descriptions, are evidently only instances of cretification.

Primary cancer of the ovary does occasionally occur, but according to my own experience it is much more common to find that a cancerous degeneration has occurred in a tumor originally cystic. I have seen a tumor about the size of a man's head, consisting of an ovary the seat of encephaloid cancer, in which not a trace of a cyst could be found; but for one such case I have seen probably twenty instances in which the tumor has been apparently an ordinary cystic formation, and only close investigation has shown that there are masses of malignant substance in its walls. To the naked eye these are generally round and smooth on the surface, exposing on section the characteristic encephaloid appearances; and on microscopic examination they are seen to be composed of cells of an epithelial type, immature, and here and there apparently trying to arrange themselves as bundles of fibres. They almost certainly arise from the follicular epithelium, and probably consist of growths from that source of the same kind as I have described in a later chapter as papillary cancer of the peritoneum. Such tumors have two or three very characteristic accompaniments, the occurrence of which should always place the surgeon

on his guard. These are the presence of omental tumors, bloody ascitic fluid and effusion into the pleura. Along with cancer of the ovary, cancer of other epithelial organs nearly always go, and cancer of the diaphragmatic pleura is especially frequent. Upon the question of the origin and diagnosis of this condition a good deal has been written, especially by Dr. Foulis, of Edinburgh, and Mr. Thornton, of London. They both claim the credit of having discovered masses of sprouting epithelium, both in the cystic fluid and in that of the peritoneum, which will enable us to diagnose cases of cancer. After a very large experience, both of microscopic manipulation and of cases of this character, I must absolutely dissent from the views they express. Dr. Foulis goes so far as to say that the absence of these sprouting masses from ascitic fluid is an almost certain sign of the absence of malignant peritonitis and malignant ovarian tumor. But actually as I write I have two patients who have undergone the operation of abdominal section, in both of whom I had diagnosed malignant ovarian tumor, and in both of whom I was led to doubt my diagnosis by reason of my being unable to find these sprouting masses in the ascitic fluid I had removed for the purpose of looking for them. I have also seen them in fluids removed from patients upon whom I did ovariotomy years ago, and who are alive still. In fact, I place no reliance on the occurrence or absence of these proliferating cell groups, for though they may sometimes be malignant, there is no ground for believing they always are.

There is another condition associated with malignancy in ovarian tumors—hæmorrhage into their cavity. I have seen one case where this occurred, yet where the tumor was not cancerous; yet as a rule its occurrence must always be regarded as suspicious.

The following is a typical example of a case of cystic tumor of the ovary which has undergone malignant degeneration,—one in which the mistakes I fell into have been of immense service to me since.

On March 2d, I was summoned to the neighborhood of Llangollen to see a patient under the care of Dr. Price Jones, from whom I received the following history. She had been confined of her first child on February 21st. The labor was natural, the child still-born, the placenta somewhat friable, but expelled without difficulty. She did not, however, diminish in size as much as usual after labor; and in a day or two symptoms of peritonitis appeared. On February 28th, her pulse and temperature fell to 100 and 99 deg. respectively, and the only matter of note was that the abdomen was greatly distended by fluid. At 2 A.M. on March 2d, I found the abdomen so distended as to have quite a drum-like tightness, the temperature quite normal, but the pulse about 180 and the respirations 50 in the minute. These symptoms were regarded as due solely to the mechanical interference with breathing. The uterus was fixed high up in a solid doughy mass, which could only be blood-clot. No intestinal resonance could anywhere be discovered. Generally over the abdominal surface a wave of fluctuation could be felt, but here and there it was less distinct. Palpation gave no assistance on account of the tenseness of the integument. The conclusion I came to was, that it must be a case of intra-peritoneal hæmatocele followed by some serous effusion; for I regarded it as impossible that it could be all blood. I tapped the abdomen, and removed about three quarts of fluid, which seemed like pure venous blood. This gave immediate relief; and when I left her, at 7 A.M. on March 3d, the pulse had fallen to 120 and the respirations to 32 in the minute. The relief of the tension also enabled me to discover floating doughy masses,

which I regarded as blood-clot. She improved considerably after this, and was brought to Birmingham on March 30th. The journey was delayed as long as possible; but she became so urgent for something more to be done that it was impossible to appease her any longer. The exertion of removal was, however, evidently too much for her, as on the following day a passive œdema of the left thigh occurred, and this was followed by an increase in the size of the abdomen. This latter condition became so serious on April 2d, that it was necessary to tap her again; and eight pints and a half of a fluid which seemed like equal parts of blood and water were removed. The breathing was greatly relieved by this for a few hours; but on the afternoon of the next day it became again very bad, and, as it then seemed to come from the chest, Dr. Heslop was called to see her in my absence. It was then discovered that the left pleura was full of fluid, and three pints and a half were immediately removed from it by aspiration. This quite relieved her breathing. As the fluid was distinctly tinged with blood, Dr. Heslop suggested that there might be some malignant disease in the chest; but, on careful discussion of the whole aspects of the case, there was no sufficient data to arrive decisively at such an unfavorable conclusion, as it was thought possible that the pleural effusion might have been the result of mechanical pressure from the abdomen. On April 4th, 5th, and 6th she was very comfortable; and, after careful discussion, it was determined to open the abdomen to determine if anything could be done to arrest the hæmorrhage. In cutting open the abdomen, a line of abnormal tissue was cut through which looked like malignant growth, and then a cavity was opened which contained a quantity of bloody fluid and thick layers of laminated fibrin. As no point of hæmorrhage could be detected, and as it was felt that any disturbance of the structure might lead to hæmorrhage which might not be controllable, the cavity was washed out with thymol solution, a drainage-tube inserted, and the wound closed. The nature of the case was not made absolutely clear by the section, as no accurate idea could be formed as to the nature of the posterior wall of the hæmatocele cavity. She died on the afternoon of April 9th. The *post-mortem* examination was made by Dr. Saundby, who found that the left pleural cavity contained about two quarts of blood-stained serum, the lung being quite collapsed, but healthy. There was a fungating ulcerated growth about the size of a walnut, covered with blood-clot on the pleural surface of the diaphragm. The right pleural cavity contained about a pint and a half of similar fluid, with a similar growth on the diaphragm. Some of the mediastinal glands were as large as hens' eggs from cancerous infiltration. The abdomen was occupied by a large tumor matted down to the uterus, broad ligaments, and section, and only after careful dissection could it be made out that this mass was a cancerous tumor of the left ovary, that into its cavity the hæmorrhage had occurred and the incision had been made. It was adherent over the whole of its anterior aspect to the abdominal wall. The microscopical appearances were those of encephaloid cancer.

Looking back on this case, I of course regret that I performed abdominal section; indeed, I did so against my own convictions and entirely at the patient's most urgent request. I had the advantage of the help of Dr. Marion Sims in the case, and therefore had as good security for avoidance of error as could be—yet we were all mistaken.

The term *colloid*, as applied to tumors of the ovary, must be held to refer only to the consistency of the fluid contained in them, and in no way as a point for classification. I have never met with a description

which has persuaded me that the colloid cancer met with in the breast, intestines, and peritoneum, has ever been seen in the ovary. The contents of ovarian cysts will be more fully discussed when we consider the questions of the diagnosis of such tumors.

Another kind of tumor, undoubtedly of ovarian origin, though having ceased to have any relation to the ovary save that of contiguity, has once come under my observation, and as I have met with no description of a precisely similar case, I am induced to place on record a full description of it. The patient was thirty-seven years of age, and was placed under my care by Dr. Blackwood, of Wednesbury, who had attended her in three confinements, the first of which was natural, the second had to be completed by the use of forceps, and in the third version had to be performed on account of obstruction. The last labor occurred in 1869, and after that till the time I saw her, April, 1873, menstruation occurred normally. During that time a protrusion from the vulva gradually formed, and when first seen by Dr. Blackwood it had reached an enormous size, and included the uterus, bladder, and rectum, and it had become perfectly irreducible. Dr. Blackwood also discovered a large abdominal tumor, which seemed to be the cause of the protrusion. I found that this tumor extended to about four inches above the umbilicus, that it filled the pelvis, and the character of the fluctuation made it apparent that it was a unilocular cyst. It was very much fixed in the pelvis, so that I gave the opinion that it was adherent, and that probably much difficulty would be encountered in its removal, but as its growth had been rapid I advised an exploratory incision. This I made in the usual way on April 27th, but could find no line of demarcation between the peritoneum and the cyst-wall. The latter was very much thickened, and on being cut through it was seen to contain a large number of hairs, not growing into the cyst, as is usually the case, but growing merely in the wall, for not a hair was to be found free on the inner surface of the cyst. The contents consisted of clear serous fluid, in which floated long processes of translucent membrane, exactly resembling the omentum of a fœtus; and there was also one long finger-like process of pure fat, encapsuled in serous membrane. The sac was emptied of everything, and attempts were made on every side to discover a division between it and the peritoneal cavity. Above, I dissected till I found that its union with the intestines was so intimate as to render its removal impossible. On each side it seemed to be entirely continuous with the abdominal walls as far as the brim of the pelvis. Below it, the uterus and ovaries were felt to be quite free, so that it was made certain that the tumor was not ovarian, and behind it the intestines could be felt in a cavity which probably extended down to Douglas's pouch. When these details had been made out, it became quite evident that the proper treatment for this anomalous case was to close the wound save at its lower angle, where a drainage-tube was placed; but before I did so, I removed a fragment of the wall of the cyst in which I had noticed the hairs. I need not give a detailed account of her progress towards recovery, more than to say that the cyst suppurated freely, and that the suppuration slowly diminished, so that in July I removed the drainage-tube. In October there still remained a slight discharge from the site of the drainage-tube, all tendency to protrusion from the vulva had ceased, and it could be felt that the roof of the pelvis was somewhat fixed and the uterus retroflected. The wound also was slightly drawn inwards, but there was no other trace of the tumor. The patient now (1876) enjoys robust health, and still menstruates regularly.

Examination of the fragment of the cyst-wall which I removed showed that hairs were growing in it, or at least existed in it, in large numbers, and that they all lay in a direction parallel to the cyst-wall. There were also traces of rudimentary skin structures, as papillæ, fat loculi, and something like glands, quite sufficient to place this remarkable tumor within the category of dermoid cysts; and in this direction also the serous membrane found within it pointed. What, then, was its origin? In answer to this, only two suppositions can be entertained, the first and least likely of which is that it was an inclusion cyst, similar to that already referred to as situated at the Torcular Herophyli. The other, and I think that which must be accepted, is that it had grown out of a wandering ovum, which, after its escape from its Graafian follicle, had failed to be extruded in the ordinary way, had not died, but had gone on to a hypererchetic development. Whatever be its origin, I have no doubt that its date was almost coincident with the life of the patient. We know that ova are sometimes matured in infantile, even in embryonic life, and also that they sometimes undergo this hypererchetic development in the ovary. In adult life, we also know that all the ova which escape from the follicles do not reach the uterus, and it is more than probable that a large number of them escape into the peritoneal cavity, and there wander till they die. As the ovum when impregnated fixes itself at once to the surface with which it is at the time in contact, and there develops, so it is not impossible that one of these hypererchetically inclined ova, having escaped into the peritoneal cavity, there becomes adherent, and grows into such a dermoid cyst as I found in Dr. Blackwood's case. All the circumstances necessary for this coincidence being rare, of necessity its results will be rare; but as our surgical experience of such matters is just, as it were, beginning, such a case as the one I have narrated may not be without a parallel. Certain it is that I have met with no description of an exactly similar instance, though the development of wandering ova into cysts is a possibility recognized by several authors, especially by Boinet. Dr. Lloyd Roberts, of Manchester, has described a simple cystic tumor which he removed sucessfully, which had no connection with the uterus or ovaries, and which he regarded as a non-fecundated ovule which had dropped into the peritoneal cavity, and there become enormously developed.

There are no diseases in the province of surgery where so much caution is necessary in weighing carefully every point in the history, every symptom and every sign, for the purpose of establishing an accurate diagnosis, as in those usually classed under the head of ovarian tumors. There are so many conditions which mimic them, and so few facts in connection with them upon which implicit reliance can be placed, that the only safety is to be found in the process of reasoning by exclusion; that is, for a proper diagnosis in the case of an ovarian tumor it will be found the best plan, first of all, to make a mental list of all the conditions that it might be, and exclude them one after another until no alternative is left. Any one who habitually follows a converse plan will sooner or later be led into some fatal blunder. Our anxiety should always be, not to prove that a given tumor is ovarian, but to show that it cannot by any possibility be anything else.

It may be said with perfect certainty that from the history alone no ovarian tumor could be diagnosed, so various are the stories told by the patients about their cases. Thus one patient will present herself totally unaware of the fact that there is any tumor, her only sensation being one of discomfort from the swelling, whilst another may have known for many

years of the presence of a small lump which had long remained quiescent, and had taken to enlarging only for a few weeks or months. The rate of increase gives no guide, either in unilocular or in multilocular tumors; for I have removed two multilocular tumors which had been in progress respectively seven and eleven years, and I have removed one of great size from a patient aged sixty-six, which had grown in four months. I have removed, on the other hand, a large unilocular tumor which had been in existence for more than ten years, and the structure of which showed that it always had been unilocular; and I have removed two unilocular tumors, one of which grew so as to completely distend the abdomen in seven weeks, and the other, almost as large, had not been noticed for more than five weeks.

The details given by the patients as to the region in which the tumors were first observed are often very misleading, and no dependence whatever can be placed on some. One patient, in whom there exists an undoubted fibroid tumor of the uterus, asserted that it originally grew somewhere in the neighborhood of the spleen, and gradually descended to its present uterine situation. Tumors of one ovary are often stated by their bearers to have originated on the side opposite to that from which they are found to grow. One condition which on rare occasions comes under our notice, hydatids of the peritoneum, beginning as it does generally by rupture of an acephalocyst of the liver, presents usually a history of origin at the upper part of the abdomen; so that, when such a story is given with subsequent general enlargement of the abdomen, caution is necessary before excluding hydatids from the possibilities. A tumor which began centrally and remains so is of course likely to be uterine; but this is far from being constantly the rule. I have heard a patient state that an ovarian tumor of considerable size had appeared suddenly; and this might have really happened, for its escape from the pelvis might have been sudden. More than once I have pushed an ovarian tumor out of the pelvis that had been impacted there, and the same thing may be experienced with uterine myomata.

The menstrual histories given by patients with ovarian tumors have been so various in my experience, as to lead me almost entirely to disregard them in the diagnosis. Dubois asserted that he had not known an ovarian cystic tumor accompanied by hæmorrhage, but this has been repeatedly noticed in my practice; and the explanation of the apparent discrepancy is that, when the great obstetrician wrote, the diagnosis of pelvic tumors had not arrived at its present state. In fact, I have had one patient with a small ovarian tumor, which I removed on account of uncontrollable uterine hæmorrhage, which had been going on for eight months, and had reduced the patient to a condition of extreme anæmia. The tumor was soft but not fluctuating, and was attached to the uterus by a pedicle, so that it was doubtful before the operation whether it was a pediculated myoma or an ovarian tumor. It turned out to be the latter, and its softness was due to its contents being nothing but inspissated blood. The tumor consisted of one larger cyst and a few smaller ones at its base. On the inner surface of the major cyst was a large ulcerating surface which seemed to be the source of the intra-cystic hæmorrhage. I showed the cyst and its contents to Mr. Spencer Wells, but he informed me that he had never met with anything like it. How the tumor caused the uterine hæmorrhage I do not know, for the patient recovered from the operation and is now quite well, though she never has menstruated since.

I have known complete arrest of menstruation coincident with the growth of an extremely rapidly formed unilocular cyst, in a case to which I have already alluded; and, from the presence of an impacted mass in the pelvis behind the uterus, the diagnosis was complicated by the possibility of an extra-uterine gestation, *plus* an ovarian cyst. The real condition was revealed only at the operation, when the pelvic mass was found to be a dermoid cyst of the other ovary. In this case the diagnosis was one of great difficulty, chiefly owing to the suspicious indication of the cessation of the menses. Such a fact in the history of any case ought to make us especially careful to eliminate pregnancy, more especially the condition of hydramnios, which I have known to be treated fatally on two occasions by tapping, once as an ovarian tumor and once as ascites. The uterus, in the early months of normal pregnancy, is not unfrequently displaced to one or other side, and has been often mistaken for an ovarian cyst; in one case, by myself, for an abscess in the broad ligament. In this latter case, I was led astray by the general symptoms of hectic from which the patient suffered. It was to me a lesson to trust to no one symptom, nor to any group of symptoms, in a pelvic diagnosis; fortunately the patient recovered completely after a miscarriage.

A large number of cases of ovarian tumor are met with near the climacteric period of life, and it is not unusual for their appearance to be ushered in by a premature arrest of menstruation; so that during the first few months of the growth of the tumor the patient takes it for granted that she is pregnant. It is somewhat curious that I have at this moment under my care two cases upon whom I have performed ovariotomy, in both of whom pregnancy was believed to exist for many months until the lapse of time made an investigation advisable. Arrest of menstruation occurred in both before the tumor was observed, so that the abdominal enlargement was of course taken for pregnancy. In one case the abdominal parietes were so dropsical that it was a matter of great difficulty to be certain that there was not pregnancy as well as an ovarian tumor, the difficulty being overcome by the use of the sound after some hesitation.

For the diagnosis of ovarian tumors, either subjective or differential, there are varieties of symptoms, almost numberless, the great majority being of little or no consequence for accuracy, and none of them alone being trustworthy. The symptoms vary in their character and intensity very much according to the size of the tumor, though this is far from being the rule. Thus the largest ovarian tumor which I have removed, somewhere over one hundred pounds in weight, gave rise to no other symptoms than the inability of the patient to get about from its immense weight; while the smallest, only six and a half ounces, was the source of agonizing pain and a great variety of reflex symptoms, including aphonia; and it had completely disabled the patient for some years. In the early growth of a simple cyst, symptoms of any kind are seldom met with until the tumor is sufficiently large to be impacted in the pelvis. The growth of dermoid cysts, on the contrary, is often accompanied by pain of a most intense kind, for which no explanation can be advanced.

In one case, already referred to, I had to remove a very small dermoid cyst on account of the agonizing pain in it. Though this has been relieved completely, a variety of nervous symptoms have supervened, very mysterious in their nature, for which no remedy has been found, and which, amongst other results, have induced a contraction in the hamstring muscles, and an absolute rigidity of the knees, so that the patient cannot walk.

As a rule, pain is not met with until cystic tumors are large enough, if out of the pelvis, to press on important viscera; or unless the surface of the tumor undergoes inflammatory change. In the latter case, pain and increase of pulse and temperature are the indications, though it is surprising to what an extent a tumor may be found to be adherent, and yet, throughout its history, no indications of inflammatory attacks have been given. Until the tumor is sufficiently large to interfere with nutrition, and if it be not of a cancerous character, there are rarely any symptoms of constitutional disturbance; though sometimes I have seen a small tumor, very loose in the cavity of the abdomen, give rise to great pain and discomfort. Such tumors also occasionally give rise to symptoms of intestinal obstruction, as was the case in the instance of a large uterine myoma which I successfully removed by abdominal section. Ovarian tumors, during the early stages of their growth, and when they have a long pedicle, are also apt to rotate and, by twisting the pedicle, to cut off their blood supply and become gangrenous. Such a case I have recorded in the "Edinburgh Medical Journal" for 1869, and many other instances are to be found in the literature of the subject. The symptoms are those of general systemic poisoning with localized pain. I do not know of any case where this complication has been diagnosed and relieved by operation, as would certainly be the proper course could the fact be recognized; but now that the rule is adopted of operating at once on the accession of inflammatory symptoms associated with an ovarian tumor, no doubt such cases will occur.

During the growth of an ovarian tumor, the appetite is usually not interfered with until the case is far advanced; nor is sleep, though it is often found that the patient can lie only on one side; nor do we find that either the temperature or the pulse is affected to any appreciable extent. Hysteria is sometimes found in connection with ovarian tumors, and dependent directly upon them. In one of my cases this was markedly the fact, for the hysteria disappeared entirely after recovery from ovariotomy. Hysterical symptoms are in constant association with phantom tumors, and these cases, in the days of the early ovariotomists, were in several instances operated upon by mistake.

As the tumor enlarges, the symptoms become more numerous and various; thus in the pelvis, by pressure on the rectum, bladder, and nerves, it may give rise to dysuria or incontinence, to constipation or diarrhœa, and to various neuralgiæ. In the abdominal cavity, by pressure on the stomach, liver, and diaphragm, it produces very frequently nausea and vomiting, and distaste for food; in one case in my own experience it caused jaundice; and very often difficulty of breathing, amounting in the later stages to orthopnœa, is induced. Coincidently with the production of these visceral symptoms, indications of great systemic alterations come on gradually, due partly to direct interference with nutrition and partly to its perversion. Thus the patient becomes thinner, and the skin dry and often hot; the eyes sink, and the features become pinched, and then comes on the peculiar expression of face named by Mr. Wells the "facies ovariana." The legs at this stage generally become œdematous, from the mechanical obstruction to the return of the blood from the limbs, and the œdema extends to the vulva and over the lower and central walls of the abdomen. When the tumor has reached such extreme size as is indicated by these symptoms, if then seen for the first time, its diagnosis becomes a matter of some difficulty, even by the careful consideration of its signs; for it is in the very small and in the very large ovarian tumors

that the diagnosis is most difficult. In those of medium size the task is much more easy.

The physical signs which indicate the presence of an ovarian tumor come under the notice of the surgeon, as a rule, only when the tumor has reached a size sufficient to have obliged it to rise out of the pelvis, and appear as an abdominal enlargement. It is sometimes, however, necessary to determine the nature of a small pelvic tumor, and, as I have already said, to remove it. Such a diagnosis is a matter of no great difficulty to any one accustomed to make the bimanual examination, more especially if it be conducted while the patient is under the influence of an anæsthetic. An ovarian tumor will be found to be almost invariably behind the uterus, that viscus being pressed forwards close to the pubic bone; and its fundus may, save in exceptionally obese patients, be felt just above the pubes. Usually the uterus can be fixed between the two hands, and then no doubt can be entertained as to what it is. Behind it is the tumor, and if the uterus can be moved independently of it, and if the tumor can also be raised out of the pelvis independently of the uterus, no doubt need be felt that it is a tumor of the ovary or of the broad ligament. How to determine between these two I do not know, nor do I think it can be of much consequence. It may be possible, as I have repeatedly experienced, to determine fluctuation by this method of examination.

As the tumor increases in size and rises out of the pelvis, it becomes somewhat more difficult to determine that it is not intimately associated with the uterus. It is often necessary to introduce the sound in order to determine this point; but this, as a rule to which I think there can scarcely be an exception, ought never to be done at the first examination. I have known a miscarriage, in more than one instance, brought on by neglect of this rule by competent surgeons. It not unfrequently happens that menstruation, or some loss resembling it, goes on for the first few months of pregnancy; and to assert the diagnosis between early pregnancy and an ovarian tumor just rising out of the pelvis, at a first examination, is a task which only the rash or the greatly experienced will undertake. If, with the patient on her back, one forefinger on the os uteri and the other on the fundus of the tumor, the two be found to embrace something which moves *en masse*, then it is, of course, certainly uterine. But if the two fingers seem to be in relation with different structures, then the outside finger must search for the fundus uteri, and after it has been found, and after it has been ascertained that the uterus is not enlarged, *and then only*, the sound may be introduced into the uterus, and its relation to the tumor readily ascertained. The first matter, then, is to be certain that the tumor is not uterine. If it be not, and it be rounded, elastic, and capable of being raised to some extent out of the pelvis, then it is almost certainly ovarian. It still may be ovarian, even if fixed to the pelvis, though it is rare that ovarian tumors contract adhesions at such an early stage of their growth. If fixed, then, it may be a hæmatocele, or an abscess, or a soft tumor growing from bone; but the diagnosis of all these may be greatly assisted by the previous history and the general symptoms; and, finally, they may be set at rest by what should always be resorted to in cases of doubt—an appeal to exploration by the aspirator. The contents of an abscess, of a hæmatocele, or of an ovarian cyst, will reveal their origin, and a solid tumor will be indicated by negative results. I have punctured many pelvic tumors with the aspirator, and have never had any ill results; the practice I adopt being to make the puncture from the vagina,

and, if a cavity be found, to insure that its contents be evacuated as far as possible.

Examination by the rectum will often yield valuable additions to the information obtained by vaginal examination as to the relations of a pelvic tumor, especially if carried out, according to Simon's plan, by the introduction of the whole hand into the rectum. This should only be done, however, under exceptional circumstances, when other means have failed to satisfy the mind of the examiner, and surgeons having large hands should not attempt it.

When an ovarian tumor has risen out of the pelvis, and has as yet met with none of the accidents to which they are liable, and which lead to complications, its diagnosis is a matter of ease. First of all, palpation will discover that it is a tumor by its resistance, and firm pressure on it with the fingers of one hand, and percussion on them with the fingers of the other yielding a dull note, will exclude the possibility of the case being one of phantom tumor; and, as the tumor pushes the intestines before it upwards and to each side, in these regions a tympanic note will give the indications by percussion peculiar to uterine and ovarian tumors. To exclude the possibility of its being a uterine tumor, some care is necessary; but it is not difficult, when the educated touch has determined that the tumor fluctuates, and that, throughout its extent, the peculiar wave passes which is found on gently striking any part of a bag of fluid while the hand rests on some other part of its circumference. A knowledge of what fluctuation is, and what this peculiar thrill is, cannot be communicated by description.

If this wave be equally distributed in every direction all over the tumor, then, in all probability, it is unilocular. A multilocular tumor, or one composed of two or three large cysts, may often be recognized by the practised fingers detecting a difference in intensity of the wave along different diameters of the tumor. There are two conditions, however, which must be carefully excluded from the possibilities, and, just because they are both very uncommon, their probabilities are every now and then overlooked. They are cystic disease of the uterus and hydramnios. In the former, the tumor will be found associated with the uterus, the latter moving along with the tumor when it is moved, and being dragged upwards by it to an extent that ought always to make us cautious, and warn us to wait and watch.

In hydramnios the usual signs of pregnancy are present, and there is, in addition, always more or less albuminuria. It is generally associated with a twin pregnancy, and, where there is any doubt in the case, it is easily determined by getting the patient into the erect position and then making a vaginal examination. The child or children will then be found settling down on the point of the finger, and can be easily felt through the thinned uterus. A slight push will send the mass floating up towards the fundus, whence it will sink in a few seconds. In this way, I have made a differential diagnosis between a unilocular ovarian cyst and a distended uterus. But if there still be doubt, the use of the sound will at once end it, and be at the same time the first step in the treatment of the case by the induction of labor.

Solid uterine tumors, besides the absence of fluctuation, have in addition two vascular signs which I have never met with in ovarian tumors; namely, an aortic impulse, which may be seen and felt, and an enlargement of the uterine arteries to be felt in the vagina. In one case, I satisfied myself that the tumor was uterine, mainly because, at the flexure of

the vagina on one side, I felt an artery as large as the radial. There is also a uterine souffle to be heard in most of the growths, and it is best heard in the vagina.

If the tumor be found to be solid but not uterine, yet attached to the uterus and moving it to an extent which may lead to the belief that it is ovarian, then we have a choice between a dermoid cyst, a fibroid tumor of the ovary, cancer of the ovary, or a pedunculated myoma of the uterus. A dermoid cyst is rarely so constituted that it will not give fluctuation at some part or other; and its peculiar nodulated character, with here and there spots of bony hardness, will often betray it. Fibroid tumors of the ovary are very rare, and cancer of the ovary alone occurs in only one form, the fibroid, which is of extreme rarity. I have been fortunate enough to meet with one case of it, and to diagnose it in life. The signs on which I depended were, that the uterus was free; that the tumors were large, smooth, oval, and solid; that they grew rapidly, and that the patient's failure in health was not commensurate with the idea of a non-malignant tumor. The fibroid tumor of the ovary may be diagnosed by its slow growth and usually small size.

There are, of course, many abdominal tumors which have been confounded with ovarian growths, and such mistakes are sure to occur again. Thus the abdomen has been opened and no tumor found at all, a mistake which in these days of anæsthetics would be simply unpardonable. Tumors of the spleen and kidney may so closely resemble ovarian tumors as to render a differential diagnosis impossible without the performance of an exploratory incision. But seeing that both the kidney and the spleen have now been successfully removed, it is possible that such mistakes may be the means of leading us to greater triumphs in surgery.

It is in the subsequent stages of the growth of an ovarian tumor that the main difficulties in diagnosis are met with; that is, between the time when a tumor has escaped from the pelvis and risen above its brim as far as the umbilicus, until it has reached the extremest size possible by the distention of the abdomen. Thus the sign of fluctuation, of so great use in the earlier period of growth, comes to have a decreasing value, because it is common to other diseases from which a large ovarian tumor must be carefully diagnosed, and a consideration of other signs is requisite. Thus inspection will reveal that in ascites the abdomen is usually enlarged uniformly, and this may also be the case in a large unilocular cyst; while in a multilocular tumor, as a rule, the irregularities of the surface will reveal the nature of the case either to the eye or to the fingers. Percussion will generally show, in an ovarian tumor, the characteristic distribution of dulness, though the accidental adhesion of a coil of intestine in front of the tumor may vitiate this indication. There is a very simple and neat way of confirming the value of the sign of percussion in such a case which I have had occasion to practise, and which will almost always decide between ascites and ovarian dropsy in such exceptional cases. It consists in mapping out the marginal area of clear percussion note by a pen-and-ink line, and then ascertaining whether a clear note, obtained by percussing on a finger laid gently on the skin immediately outside that line, can be altered to a dull note by increasing the pressure. If this alteration take place generally round the line or throughout its greater part, it may be taken for certain that an ovarian tumor is present. On the other hand, if there be a clear note somewhere over the area of the swelling which is not removed by firm pressure, but is rather extended or intensified, still more if pressure bring out a clear note where dulness existed without it,

then it will be evident that ascites is present, and not an ovarian cyst. The explanation of these signs is, that pressure round the margin of an ovarian tumor will bring it into more extensive relation with the abdominal wall by displacing the intestines, and this is most easily accomplished in the epigastrium. In the converse condition, when a clear note is produced by pressure in ascites, the abdominal wall is brought into contact with floating intestine, the mesentery of which is so short, and the quantity of fluid so great, as to keep the structures apart in the absence of the pressure. We have, further, a difference between the clear percussion notes of ascites and ovarian dropsy, in that the former readily alters its position, always appearing at the part of the tumor highest in relation to the patient's position. Thus, in a doubtful case, if there be a corona of clearness above the supposed tumor, extending from the hepatic to the splenic regions, and any alteration of position, such as lowering the shoulders and raising the pelvis, should alter the position of the area of clearness to the region of the umbilicus, then the case is almost certainly one of peritoneal dropsy.

About a year ago I met with a case where even this sign failed me, and where I opened the abdomen to remove an ovarian tumor and found only masses of peritoneal cancer. The reason of the mistake was, that the intestines were all matted together by growths in the great omentum, and were drawn up into an arch under the diaphragm. The exploratory incision, however, did no harm, the patient dying some time after from the extension of the disease. Additional difficulty was created in this case by the fact that the patient had been twice tapped before the operation, and no doubt was entertained that a cyst had been emptied, and that the masses felt were smaller cysts. Still more recently I have operated on a case in which no intestinal note could be obtained anywhere. The patient had suffered from recurrent peritonitis, and it was evident that the intestines were all behind the tumor. At the operation this was found to be the case, and the adhesions were of the most formidable character. Yet the patient recovered without a bad symptom.

A short time ago a case occurred to me in which a more accurate diagnosis was not, I think, possible, and yet where a mistake was made which might, with less good luck, have proved fatal. A woman about forty-eight years of age came under my care with all the signs of a unilocular cyst, and I diagnosed it as parovarian. I did not tap her, but performed abdominal section for its removal. After opening the peritoneum the first thing I found was a length of intestine flattened over the tumor just where a trocar would have been inserted if I had tapped her. The case turned out to be a cyst of the mesentery, the folds of which being separated by the growth of the tumor, left the intestine just where I found it. I drained the cyst and the patient recovered completely.

It very frequently happens that we have both ascites and an ovarian tumor present at the same time, and then it requires a careful consideration of the signs to prevent mistakes. The *tactus eruditus* of a practised ovariotomist can recognize at once that there is a double wave of fluctuation; one superficial and rapid, due to the ascitic fluid, and another, deeper and perceptibly less rapid, due to the fluid in the cyst; but, to the beginner, such a complication is puzzling. If the fluid outside the cyst be small in quantity, its diagnosis is of no great consequence; but if large, its non-recognition may lead to serious mistakes. For instance, in one of my recent cases I satisfied myself that there was an ovarian tumor from

the signs given by percussion, and that there was evidently some ascites from the double wave of fluctuation. The patient was of an enormous size, and the growth had not existed for more than six months. It was a grave question whether I had to deal with a multilocular tumor having one or two very large cysts and a small quantity of ascitic fluid, or with a small tumor and a large quantity of ascitic fluid. The only method of deciding the question would have been to tap the abdomen above the tumor by my blunt trocar, and to have evacuated the ascitic fluid only; but to this the patient would not accede, and I had to begin the operation in serious doubt. The result showed that the plan referred to would have been a wise one, for it proved to be a comparatively small tumor with an enormous ascitic collection, all the intestines having been pushed above the tumor. There are some minor signs which often serve to indicate the presence of ascites to any marked extent, such as the protrusion of fluid through the omphalic ring, carrying in front of it a layer of peritoneum like the finger of a glove. The uniformity of the enlargement by ascitic fluid is greater than that produced by ovarian dropsy, though in the case just referred to this indication failed me; for it was the want of symmetry in the measurement which suggested that the chief cause of the enlargement was cystic. The readiness of alteration of the form usual to an abdomen distended by peritoneal dropsy was also absent; for in whatever position the patient lay, the same outlines were preserved; and the greatest proportional increment of measurement had occurred between the umbilicus and the pubes. This peculiarity is usually an indication of ovarian cysts or of uterine tumors.

The enlargement of the veins often seen in the skin of the abdomen in cases of ovarian tumor is of no great assistance as a diagnostic sign, for it is present in almost every other disease simulating ovarian dropsy.* Vaginal examination of a case in such a stage as we have been discussing gives very often totally negative signs, and these are generally satisfactory. Thus, if the uterus be normally placed and freely movable, the indications are in favor of a long pedicle and the absence of pelvic complications. If, on the other hand, the uterus be drawn up out of reach, or is fixed to the tumor and moves with it, more especially if the uterus be tilted to one side, then the pedicle will probably be short. Some minor cysts may be felt at the roof of the pelvis, and if there be much fluid outside the tumor, the recto-vaginal *cul-de-sac* may be felt distended. I have not yet, however, met with this sign of ascites; not even in the exceptional case I have referred to did it help me.

Auscultation of ovarian tumors gives chiefly negative signs, but these are often of value, as in the case of perfect absence of intestinal gurgling over the tumor. A loud friction-sound is often heard, but this is only an indication of a dryness of the peritoneal surfaces where it is heard, and there is sure to be an absence of adhesions at the spot. The hydatid fremitus, so well described by Mr. Wells, I have never been fortunate enough to meet with.

Tapping, either for the removal of ascitic fluid or the contents of a cyst, is often a great help towards an accurate diagnosis. By the removal of peritoneal dropsy, we may discover the actual relations of an ovarian

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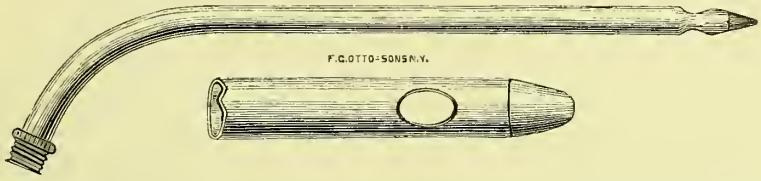
* Any very marked enlargement of the veins may, however, be a reason for suspecting maligant disease if the other indications be negative. In one or two instances I have seen this enlargement the only indication of the cancer found on opening the abdomen.

tumor, or we may even find that the supposed tumor has no existence. By the removal of the contents of a large unilocular tumor, or of the contents of one or more of the major cysts of a multilocular growth, we may determine the existence of pelvic adhesions, the existence of pregnancy, or of some other condition that may alter in great measure our views as to treatment. I am strongly of opinion that preliminary tapping in doubtful cases is not resorted to with sufficient frequency; for Mr. Spencer Wells has certainly disabused us of the idea that it is such a very formidable proceeding as used to be taught, and he has shown that it is very useful in gaining time and in clearing up difficulties. Still, the belief must not be entertained that tapping is ever absolutely free from risk. Of the occasional misfortunes attending it, I had a very notable instance in the case of a patient sent to me two years ago by Dr. Laidler, of Stockton-on-Tees. She was of enormous size, so that it was advisable to tap her before removing the tumor. Unfortunately, the cyst-walls were permeated by large venous sinuses, and one of these was injured by the trocar, so that several pounds of blood poured into the cavity of the emptied cyst, and the result was unfavorable to the success of the subsequent ovariotomy. Besides such an exceptional risk as this, there is the possibility of suppuration of the cyst after tapping, or the infection of the peritoneum by its septic contents. The rule is, therefore, that for three or four days after tapping the patient must be kept in bed and carefully watched, and if there be any sign of inflammatory mischief, *the tumor must be removed without delay.* The operation of tapping is best



performed by a trocar which I have devised, having a steel point with a chisel edge, which is almost blunt. The patient having been placed in a convenient position, a puncture is made by an ordinary lancet into the cyst, and the trocar is made to follow the track of the lancet. The trocar is so simple that it never can be out of order; it forms a solid rod, which is extremely useful as a probe, and its point is sharp enough to penetrate an inner cyst, and yet so blunt as to be incapable of mischief save in the hands of the clumsy or the careless. Great care should always be taken to empty completely the cyst which is tapped and to prevent the admission of air, and for this latter point the perfect solidity of my trocar is the most absolute guarantee. By the use of the trocar as a probe much valuable information as to the relations of the tumor may sometimes be gained.

Sometimes tapping is curative — a fortunate result that I have met with twice in cases where I have tapped unilocular pelvic cysts through the vagina. It has sometimes happened, as noticed by Mr. Wells, that the tapping of large cysts through the abdominal walls has been followed by cure. It is more than probable, however, that these cases have been cysts of the broad ligament; for a truly unilocular tumor of the ovary—that is, a tumor of one cyst, with nothing else that would be likely to develop subsequently into other cysts, even if the first were cured—I have not yet met with. I think, therefore, that it should be the rule to tap all unilocular cysts, and give them a chance of cure in this way.

Tapping by the vagina is not always attended with good results in ovarian tumors. I have known death result three times after it in the practice of others. Mr. Wells has found it better to keep the opening patent, and to encourage suppuration and discharge, than to allow the puncture to close. In the two cases to which I have referred, I fully exhausted the cyst by the aspirator, and to this, perhaps, may be attributed the fortunate results. In tapping through the abdominal walls, whether for the purpose of diagnosis or treatment, the point of puncture should be in the linea alba, if possible, but this may be varied by circumstances.

Sometimes I have punctured above the umbilicus, but generally it is better to keep between the umbilicus and the pubes, going above the former spot only when there is some solid matter below, or some suspicious circumstances that may warrant the exception. I never take any special precautions for tapping, beyond having the patient laid comfortably on her side, with the abdomen hanging slightly over the edge of the bed. After having pressed the wound together with my fingers for a few minutes, I seal it with a piece of lint dipped in styptic colloid.

Great hope has been entertained that by chemical examination of the fluid removed by tapping, or by the microscopical investigation of elements contained in it, assistance might be gained in the diagnosis of doubtful cases; but after having, as I believe, read everything which has yet appeared on the subject, and after having devoted a very considerable amount of labor to both of these inquiries, I have come deliberately to the opinion that the hope is fallacious. As yet, no chemical compound is known which is peculiar to ovarian fluid, and I am absolutely certain that no microscopical element is of any value for a differential diagnosis.

Mr. K. Thornton, in a paper in the *Medical Times and Gazette*, April, 1875, asserted his belief that he had found cells which were characteristic of ovarian cysts. This view I combated at the time, and Dr. Foulis, of Edinburgh (*British Medical Journal*, July; 1878), quite concurs in my view that these cells are of little practical value for diagnostic purposes. It will be seen elsewhere that I do not agree with Dr. Foulis on another matter of microscopical diagnosis, and my readers may take it for granted that on a point where there is so much difference of opinion between three authors who have done as much work as we have, there is not much room for certainty.

Great stress used to be laid in former times on the diagnosis of adhesions; but, with greater experience of the disease, we are now led to disregard almost wholly any adhesions that are not visceral or pelvic. Parietal adhesions seem to be of very little consequence; and if of any great extent, they may be diagnosed, provided the tumor be not of extreme size, by carefully watching the movements of the tumor during respiration. If it be free in front, its upper margin may be seen gliding under the abdominal wall synchronously with the play of the diaphragm. Mr. Wells states he has seen the umbilicus move with an adherent tumor during respiration. Perhaps the most trustworthy point in the diagnosis of adhesions is a careful inquiry into the patient's history, for the occurrence of febrile attacks accompanied by localized abdominal or pelvic pain. I have broken up adhesions to every one of the abdominal viscera in cases which have recovered, even to the spleen.

The diagnosis of the variety of tumor in each case is of importance in guiding us to its treatment; therefore it is not for the mere exercise of ingenuity that I recommend every practitioner dealing with a case of ovarian tumor to exhaust every point on which I have dwelt, together

with many others to which I have not alluded, but which the individual peculiarities of each case and his own personal shrewdness may suggest. Above all, let me again urge the necessity of reasoning by exclusion, and of making repeated examinations at intervals before any certainty of diagnosis is felt. Three times it has occurred to me to remove ovarian tumors which had hastily been set down at an early period of their history as floating kidneys, that diagnosis having been made in all three cases because the wish was father to the thought, and because the practitioners who made it had not learned the value of patience. It is this want of patience that is to blame for those melancholy instances of blunders, altogether unpardonable, where the abdomen has been opened in cases of normal pregnancy mistaken for ovarian tumors.

A final means to be employed in the diagnosis of ovarian tumors, a *dernier ressort* in cases of doubt, is the exploratory incision. Such a proceeding is quite justifiable in any case of abdominal tumor which has been watched for some time, and where none of the ordinary indications suffice to make its nature certain. It is also to be recommended as a preliminary to the surgical treatment of some tumors, either uterine or ovarian, when the possibility of removal is doubtful, and the relations of the tumor can be ascertained only by exploration. The mortality of exploratory incisions has, in Mr. Wells's practice, seemed to have been small enough to support this opinion, and I have had no death where nothing more than a simple exploration has been made, out of nineteen cases. I need hardly say, however, that these remarks are not to be understood as a justification for an inexperienced practitioner to depend upon an exploratory incision for his diagnosis. A disproportionate number of exploratory incisions and uncompleted operations must be taken as evidence either of carelessness in diagnosis, or of a rashness, based upon ignorance, in the treatment of these important cases.

The treatment of ovarian tumors by therapeutics need not be discussed, further than to say that it is limited to the administration of tonics to sustain the functions of the patient, or to correct some errant condition which might diminish the chances of success for the surgical treatment of the case. Sometimes we are the victims of singular coincidences, which seem to militate against the general experience in this matter. Some years ago I was consulted by a woman with an enormous unilocular tumor, whose husband declined all operative measures. Some months afterwards she received from the hands of a physician some inert *placebo*, and soon afterwards the cyst ruptured and its contents were absorbed. Since then she has remained permanently well, so that I have no doubt that the tumor was a single cyst of the broad ligament, arising in the parovarium.

The surgical treatment of ovarian tumors has now been simplified into two operations: the minor operation of tapping, which is palliative and, on certain occasions, curative, and the major operation of ovariotomy, which is either curative or fatal. In the process of development through which the surgical treatment of ovarian tumors has passed, many various and injudiciously strong opinions have been expressed on one or other or both of these operations; but during the last fourteen years there has grown up an experience in the hands of one man, incomparable with anything else in the annals of surgery, and that experience has been so conscientiously detailed and so critically examined, and its conclusions have been so irresistibly drawn, that there is from it at present no appeal. To Mr. Spencer Wells must be accorded the credit of having placed ovariotomy in the position not only of an acknowledged operation, but of one

of the most successful of the great operations of surgery. I do not believe that any other capital operation would bear the same searching scrutiny as Mr. Wells's cases have been subjected to, and come out with as brilliant a result. And it must further be borne in mind that a successful ovariotomy does not send the patient away maimed, as if she had lost an eye, or a limb, or half her jaw; but it restores her to her place in society, ready even, it may be, to fulfil completely the whole of her physical functions. We may therefore fairly claim for it the position of one of the most brilliant and most successful of the triumphs of surgery; and if the marvellous results obtained by Dr. Keith, of Edinburgh, become general—and there really is every hope that they will do so—it may surely be said to transcend all other surgical achievements.

Many other plans have been devised for the radical cure of ovarian tumors, but they are now all abandoned in favor of ovariotomy; and such methods of treatment as the injection of iodine or the establishment of fistulous tracks can only be justified under very exceptional circumstances.

The proper selection of cases for the performance of ovariotomy is one of the many difficulties we have to encounter in practice, and can be based on experience alone. The fullest consideration of the various symptoms and signs of the tumor, the age and health of the patient, and, most of all, a careful watching of each case for some time, are one and all essential conditions for the success of the operation. Ovariotomy is an operation for the success of which it is not very easy to pick cases; that is, that a surgeon who selects some cases and rejects others, simply with a view to a good mortality bill, will, in all probability, find himself egregiously mistaken. In my opinion, there can be only two reasons for refusing to do ovariotomy in any case; and these are either that the case is not far enough advanced, or that the tumor in all probability could not be removed. Acting on this belief, I have operated on a number of cases where the chances of recovery were very small, and where perhaps I might have been justified in refusing to interfere. But I have seen such very bad cases recover, that I think there is hardly any case without some chance, if the tumor can be removed. I therefore state my views candidly to the patients, and I have nearly always found that they elect to have the chance of life *with a cure*, rather than the mere prolongation of a miserable life for a few months, with a horrible death at the end.

It is in my own experience, and I am glad to find it is also in that of Mr. Wells, that about the most unfavorable case for ovariotomy is to be found in a young healthy woman with a medium-sized tumor. A woman past the middle age, or pulled down in health by the growth and the confinement necessarily incident to its later stages, has a far better chance of recovery than the other; and in the case of the younger and healthier woman, it will be found advantageous to temporize by tapping or other advisable expedient. Indeed, as Mr. Spencer Wells has laid down, as long as the patient's visceral functions are not interfered with by the pressure of the growth, nor her life made uncomfortable by her unwieldly size, or by her disfigurement, or by pain, it is unwise to interfere with an ovarian tumor. In fact, the rule ought to be to delay an ovariotomy as long as is consistent with the patient's chances of recovery, bearing in mind that it is not the healthiest that recover best. On the other hand, the major operation must not be too long delayed; for though Mr. Wells's statistics show that one or two tappings do not affect the mortality of subsequent ovariotomies, yet the results of multiplied evacuations of the cyst are far from favorable.

It is almost a matter of routine in the major operations of surgery,

that it should be carefully ascertained that the patient is not suffering from organic or serious functional disease of any important organ, and this, for ovariotomy, must never be neglected. Especial care must be taken to examine the condition of the urine, for the state both of kidneys and bladder is a most important factor in the success of the operation.

Presupposing that a proper case has been selected, and that any defect discovered has been rectified, we come to discuss the stages of the operation, the precautions to be taken before, and the treatment to be followed after it. First of all, there is the position of the patient—where shall she be? Experience answers that the more nearly her surroundings resemble those in a healthy private house the better; and the statistics show that the performance of ovariotomies in a large general hospital is altogether unjustifiable. There is no operation in the whole range of surgery where the patient seems to be so apt to be infected by septic influences, and no precautions against them can be too great. For any surgeon to perform an ovariotomy whilst he is engaged in dissection or in the performance of post-mortem examinations, or whilst he is attending any case from which he may be likely to convey septic infection, should therefore be looked upon as a professional offence of the gravest kind. I am also strongly of opinion that no surgeon engaged in constant attendance on the promiscuous cases admitted to a general hospital should perform this operation, and I look on it as mere foolhardiness on the part of any one to perform it, to whom it will probably never occur again to engage with such a case, or whose experience is likely to be limited to two or three such cases in a lifetime. It is an operation beyond all others requiring that readiness of adaptation for emergencies which experience alone can give. Its complications are far more varied and tax far more heavily the courage and presence of mind of the operator than those of any other operation in surgery; and one or two successful cases scarcely compensate for those which are unsuccessful by lack of experience.

It may be urged against these views that they are merely the opinions of a specialist, and therefore represent only a limited interest; but my experience, were I permitted to detail it, would be sufficient not only to convince my readers that my views are well founded, but that they really represent the best interests alike of the public and of the surgical profession.

The room in which the patient is to be treated ought to be fairly large, and so arranged that ventilation may be possible from window or door to the fireplace without the current crossing the bed of the patient. There should be no unnecessary furniture, and as little upholstery work as possible. Two small iron couches, with firm hair-mattresses and a water-pillow, are needed; and an intelligent woman for nurse, who will do as she is told, *and nothing more*, is absolutely essential. If two such can be got to act as relays for the first eighty hours after the operation, it will be found a great advantage.

The patient herself requires a little preparation for the change that is about to be made in her alvine actions. For this purpose, I direct that her food should be limited to soup and a very little bread for forty-eight hours before the operation, and that on the morning of the day previous she shall have a small dose of castor-oil, followed, early on the morning of the operation, by a dose of eight to ten drops of laudanum. I generally operate in the afternoon, and I do so, in most cases, on the bed the patient is to occupy, the only precaution taken being to place a thick draw-sheet under the patient. The time of the operation should be about midway between two menstrual periods. The instruments for the operation are chiefly scalpels; dissecting, artery, and vulsellum forceps; two syphon tro-

cars of different sizes; various sizes of clamps; a chain *écraseur*, cautery irons and clamp, needles, silk thread and wire, some solid perchloride of iron, and good sponges. As the operator grows in experience, he will find that there are many other instruments that he may have near him with advantage, such as an aspirator. Especial care must be taken to have the sponges clean and of good quality. To secure this, I generally get a very large and fine cup-shaped Turkey sponge, and cut it into four, six, or eight pieces. These I soak for twenty-four hours in a solution of muriatic acid sufficiently strong to be disagreeably acid to the taste, and thus get rid of the chalky sand which infests them. It used to be my custom to use fresh sponges for every case, but I find that, after being used, if they be well cleansed in cold water, and then soaked for a day or two, first in a strong solution of sulphurous acid and then in a strong brine, and afterwards once more well washed, they are quite as good as new. These should be given into the care of one assistant, who should know their number, and who should allow no one else to meddle with them under any circumstances whatever. Many of the disasters of ovariotomy have occurred from the officiousness of bystanders; and, amongst others, the tearing of sponges into pieces, so that their number is miscalculated, and one is perhaps left in the abdomen, has to be mentioned. The operator has need of only one other trustworthy assistant, and no bystander should interfere unless asked.

There cannot be a doubt that an important item of success in ovariotomies lies in the anæsthetic employed; and however valuable chloroform may be in obstetric work, in this operation its use is quite inadmissible, on account of the frequent and very persistent vomiting which follows its use. I have seen this vomiting have a fatal result, and it has so often given me great anxiety that I strongly urge the discontinuance of Simpson's anæsthetic for ovariotomy. The use of ether is far safer, and this advantage overcomes all the minor disadvantages it possesses. I have used no other anæsthetic for surgical work for nearly two years, and I have had no reason to regret the change.

There comes in now the question of the adoption of what are called antiseptic precautions, and of these it is quite impossible to speak without a discussion, however brief, of the theory upon which they are based. This is necessary for many reasons, but chiefly because the followers of the antiseptic doctrine assert, with a vehemence worthy of the scholastics of the fifteenth century, that unless there be faith in the doctrine there can be no success in the practice. To ask an evolutionist to accept the germ theory in its present form, is almost equivalent to asking a Unitarian to accept the doctrine of transubstantiation. I therefore at once say that I cannot accept the views of the germicides, for I cannot refuse the conclusive evidence upon which the doctrine of evolution is based, and biogenesis is a mere corollary of that. But that there may occur, at any operation, the introduction of such germs into the system as will produce disastrous results, is a statement that no one of experience could doubt. That there may be agents and processes by which these germs can be destroyed also is worthy of admission, but that they have not yet been satisfactorily established is certain from the constant changes which we find are being brought forward in the practice of the germicides. That these agents for destroying germs must be useful, if they are effectual, in such places where germs abound or where they are of a peculiarly septic character, admits of no denial. Antiseptic precautions must therefore be of use in hospitals, if they are to be of use anywhere; but it must be borne in mind that they can be of use only against immediate and direct sepsis—

that is, poisoning of the wound at the time of the operation. It is ridiculous to suppose for a moment that any antiseptic precautions could remove the dangers of an unhealthy atmosphere, foul wards, and an overcrowded hospital. Yet this is precisely the tendency of the modern fashion of antiseptics, and it is the direction where the germ theory is likely to be dangerous. Its upholders seem entirely to forget the great biological fact that not only is the seed necessary for the production of the plant, but that the suitable soil is quite as requisite. It is far more sound practice to look after the condition of the soil than to prevent the access of germs, though there cannot be much harm in doing both. All that I contend is, that the former must not be neglected.

All such questions as this must, however, be resolved by empirical experience, and no amount of speculation will refute facts.

Within the last few months a large amount of experience has been published, especially by Dr. Keith, of the application of the antiseptic system to the performance of ovariotomy. After a most careful perusal of it, I am bound to say that an analysis of the whole results supports my own experience entirely, that the case of the antiseptic system is not proven. We find that in Dr. Keith's case he started with a mortality table much lower than that of Mr. Wells, but then he had the advantage of Mr. Wells's previous experience and of the experiences of others. In each succeeding hundred cases Dr. Keith's mortality has diminished, and this has been clearly due to his increasing skill and care in operating. At the point of the introduction of the antiseptic system into his practice there is no evidence of a mortality diminished in a greater proportion than might have been expected without it. This is precisely my own case. My first fifty cases were marked by a high mortality, which disappeared in my second series, owing to my increased experience and to a better sanitary arrangement of my patients. In subsequent experience of the antiseptic system I can find no evidence of better results due to it, indeed I can credit it with at least one death which should not have occurred. My experience is, however, too small yet for absolute conclusion, and I am giving the system a faithful trial.

It may very fairly be urged against me that I am trying a system in which I have no faith, but this is only partly true; for the antiseptic practice is a gospel of cleanliness, and in this way it has an immense influence on nurses and attendants. Besides this, if my patients die of septic fever in the absence of antiseptic precautions, it might be urged that I had wilfully neglected an accepted precaution, and no surgeon dare incur such responsibility.

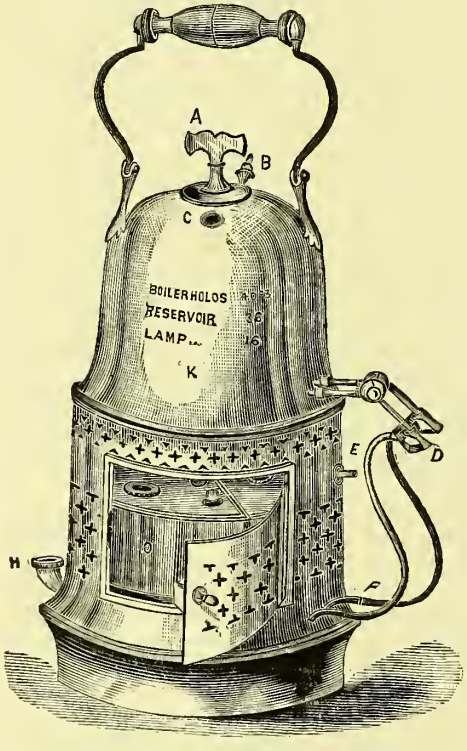
All antiseptic precautions must of course be based on the assumption that everywhere there are poisonous germs, and every road against their admission to the wound must be barred. For this purpose phenol and its various preparations form the most extensively accepted weapon. With this belief, it is of course impossible to believe that too minute precautions can by any possibility be taken, yet it has often amused me to notice that the precautions taken by ardent believers are usually not nearly so minute as those which I myself adopt.

There can be no doubt that the details of the antiseptic system are a great trouble. To perform an ovariotomy antiseptically is at least four hours' work, including the time required for preparation; and it is quite impossible to trust the details to any but those in whom the most perfect confidence can be placed. There is equally no doubt that certain of the details of the system, the antiseptic spray especially, are a great hindrance to the operation; and I have more than once seen an ardent antisepticist

push away the spray impatiently in order that he might secure a bleeding point. The first ovariotomy which I saw performed antiseptically ended very disastrously, for the spray seemed to prevent the operator recognizing the peritoneum from the transversalis fascia, and he made a very extensive separation of the two before he found out his mistake.

To attempt a close description of the details of the antiseptic system as I apply it to ovariotomy would be to fill this volume. Having secured that all my sponges, instruments, ligatures, &c., have been submerged in a bath of a solution of phenol in water—1 in 30—the patient and everybody else thoroughly phenolized, the surface of the abdomen wetted all over with a strong solution, the hands of everybody likely to touch anything equally disinfected, I direct the antiseptic spray upon the site of the future wound. This spray is of course a most important part of the whole affair—perhaps the most important. It is therefore very essential that the contrivance for producing it should be perfect, and not liable to be out of order just when wanted. I have therefore taken much trouble to contrive a spray apparatus which can be depended upon to go on uninterruptedly for three hours, and that of which I here give a figure will do so.

It is made in such a way that it can be suspended in a window on a level with the head of the operator, so that the spray descends upon the patient. In this way the full action of the spray is secured, and the bystanders are spared its disagreeable effects. There are two jets of spray (D D), capable of different direction, and the reservoir (I) is so placed that but slight force is required to draw its contents out. These consist of a hot filtered solution of phenol, 1 in 25. Dr. Keith has raised an objection to the spray, that it may produce or increase shock in cases of prolonged operation, and there can be no doubt that it does. It should not be removed, however, until the dressing is complete, and all subsequent examinations of the wound should be under its influence, till the stitches are out and the clamp off. The antiseptic treatment most unquestionably prolongs the period of separation of the clamp. For antiseptic dressing dry phenolized gauze is the best. In fact, the best of all antiseptic measures are those which insure a dry wound. All other details may be summed up in the direction that nothing which is not phenolized must touch the patient.



The patient having been completely anæsthetized, and properly placed, and the bladder emptied, I make an incision in the median line between the umbilicus and the pubes, the latter having been shaved, not less than four inches long. This incision should go at once through skin and subcutaneous fat. A pause then is made, and any bleeding point of the slightest consequence is seized by M. Koeberlè's scissor-handled forceps, than which I do not know a more valuable instrument. The bleeding having been *entirely* checked, the central tendinous line is sought for, but is not always so easily found as might be imagined. The easiest way to find it is first to make a short diagonal cut across it, and then it may be followed. The tendinous expansion is then laid open, as is also the extra-peritoneal fat, until the peritoneum is reached. Another pause is then made, and again *all bleeding points must be secured.* While the surgeon makes these incisions, he will find a soft towel in his own left hand far more useful in letting him see what he is about, than any number of sponges in the hands of assistants. To open the peritoneum, a variety of devices are in use; but I trust to nothing but a sharp knife, and I open the cavity at the middle of the wound to as great an extent as will admit my left forefinger. Passing this downwards, I extend the wound in that direction by a probe-pointed bistoury. In this way, there is no possibility of cutting anything the forefinger cannot feel, and it always must be the best director. The wound should be brought down as close to the pubes as is consistent with the safety of the bladder, so as to diminish the subsequent strain on the pedicle, if it should happen to be short and have a clamp applied to it. If there be no adhesions between the cyst and the peritoneum in front, this part of the operation is very simple; but if there be adhesions, it is no easy matter in some cases, to find the point of union; and, in spite of the greatest care, occasional instances will probably happen of mistaking the peritoneum for the cyst. The peritoneum is often so altered in appearance, being thick, leathery, and gelatinous, as to deceive any but the most experienced operator. When the cyst is reached, it should be tapped by a large-sized syphon trocar, and emptied as quickly as possible. Sometimes the cyst contents are glairy, or even gelatinous, and will not pass through a trocar; in which case the cyst must be laid open for three or four inches, the edges of the opening into it seized and dragged outwards by forceps, and the contents scooped out as well as may be. After the major cyst has been emptied, traction should be made on it, so as to draw it gently out through the wound. Two kinds of obstacles may hinder its exit—secondary cysts or adhesions. The secondary cysts should be punctured or broken down from within the cavity of the major sac, thus preventing as much as possible the escape of the morbid fluid into the cavity of the peritoneum—a most important matter. Adhesions are mediate or immediate, the former being generally parietal or omental, existing in the shape of round or flattened bands of peritoneum. They seem to be formed by isolated patches of adhesion, dragging off the peritoneum from the abdominal wall, or by pieces of adherent omentum. They are seldom large, and are only of any moment when traversed by an important blood-vessel, which must always be secured by torsion or ligature, or by the cautery. The immediate adhesions, if of old date, are often very serious, so much so as to render it sometimes impossible to complete an operation when they occur in the pelvis or to some important organ, as the liver or stomach. When the tumor is adherent only to the anterior wall of the abdomen, the complication does not seem to be of great moment. I have, in one case, separated very extensive

adhesions in the pelvis successfully, but I have also seen an iliac vein torn across, fatal hæmorrhage being the result. I have removed two very large tumors which were adherent almost universally; in one case the patient died in forty hours of shock, but in the other she recovered. I had diagnosed extensive adhesions before the operations in both cases. The best aid in the treatment of adhesions is an inexhaustible patience.

In intestinal adhesions it is safer to cut out a piece of the cyst and leave it, than to run the risk of tearing the gut. Rash operators may wound the intestine in extending the incision upwards, and I have heard of the bladder having been opened in cutting downwards; and as a further illustration of the unlooked-for dangers which surround this formidable operation, I may mention an incident of which I was a spectator many years ago. During an ovariotomy, an adhesion to the cœcum had been carefully severed, and the operator, thinking nothing remained but a band of peritoneum, divided it with the scissors, when it was found to be the vermiform appendix. In a recent case in my own practice, the same misfortune would have happened had I not suddenly remembered the possibility of such a disaster from my having witnessed it.*

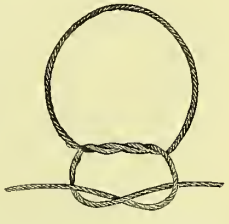
Hæmorrhage from adhesions is sometimes troublesome, and may require considerable patience to overcome it. If a bleeding point be within sight, and it be limited to one mouth, it had better be secured by a ligature cut short, if torsion fail to stop it. If it consist of oozing from a surface, either a touch with the solid perchloride of iron or the hot cautery is better.

If there be no adhesions and no large secondary cysts, ovariotomy thus far is a very simple operation, which seldom takes above five or six minutes to complete, and this simplicity has been a great snare to many; for there is no operation usually performed which requires the surgeon to be more alive to possibilities, and to be prepared for them, than ovariotomy. Thus a second dermoid cyst may be found packed down in the pelvis, as has twice happened to me, and to get it out may be a matter of no little trouble. For such a condition the aspirator will be found invaluable, and it ought always to be within reach. The cyst-walls may be found so thin that any kind of forceps will tear them, or the contents so glairy that they will not run through a trocar; or the secondary cysts may be found so numerous and so small that there is no alternative but to bring them one by one to the surface and slit them open, brushing the escaped contents immediately off with a towel. This has occurred in my practice several times, and I have always adopted this plan rather than carry the incision above the umbilicus.

As the tumor is being withdrawn, an assistant should be ready, on the left side of the patient, to insert the forefinger of his right hand into the wound, and, by grasping the integuments on the one side with his thumb, and on the other with the remaining fingers, to close the wound, and thus prevent the escape of the intestines. If he be sufficiently alert, the bowels need never be seen in a well-conducted ovariotomy. Having got the tumor fairly out, the surgeon's first duty is to examine the pedicle and decide how it is to be treated. This is by far the most important question about the operation, and one which is by no means yet settled. At one time I often used the écraseur, and of eleven cases so treated nine recovered. I have a distrust of the écraseur, however, because, in two of my cases, intra-peritoneal pelvic hæmatoceles formed coincidently with menstruation

* I have since had a second repetition of this curious experience.

a few weeks after the operation. In neither of them was there any danger to life produced by the hæmatocele; but considering how frequently an irregular menstruation occurs a day or two after ovariotomy, I have given up the use of the écraseur in the treatment of the pedicle, dreading an unfortunate result. There is, moreover, the objection to it that the raw surface of the divided pedicle is apt to become adherent to intestine and be an after source of danger. This has not, so far as I have yet learnt, happened to any of my patients, as they are all well, save one who died recently of apoplexy, at the age of seventy-two. It may be, therefore, that my mistrust in the écraseur is ill-founded. I have used the clamp a large number of times, and have had quite the average success with it. But Dr. Keith's splendid results with the cautery have induced me to adopt that method of treatment. The question really lies between the intra-peritoneal method of treatment of the pedicle and the extra-peritoneal method. In the former the risks are, firstly, hæmorrhage; secondly, suppuration of the stump, an occurrence which was fatal in a case upon which I operated for my friend Dr. Boddaert, at Ghent, in 1873, and in which I used the écraseur; and thirdly, the attachment of the pedicle to intestine. In the extra-peritoneal method, the immediate risks are much greater, and therefore it is that the success of the intra-peritoneal method excels that of the other. These risks are, firstly, invasion of the peritoneum by decomposing discharges, or by wandering and infecting cells, along the track of the pedicle; for sometimes when the pedicle is short, thick, or broad, it is a very difficult matter to close the integuments accurately round it; and on post-mortem examination, a minute aperture is discovered which has caused the fatal issue.* Secondly, there is the risk of an abscess forming in the pedicle below the clamp or within the abdomen, as in a case operated on by another surgeon to which I was called, and where I fortunately discovered such an abscess, and by opening it probably saved the patient's life. There is also the further risk of gangrene of the pedicle starting from the clamp, an occurrence which carried off one of my patients on the seventh day. Thirdly, there is the distant risk of intestinal protrusion at the seat of the pedicle, a condition not likely to prove fatal, but still to be entertained as a risk; and there is also the danger, which is both immediate and distant, of the strangulation of intestine between the pedicle and the abdominal wall. This did actually occur in one of my cases, but none of the symptoms suggested the possibility of such an occurrence, so that I did not venture to re-open the wound, as of course should be done if there be reason to suspect it. The balance of *à priori* reasoning is therefore on the side of the intra-peritoneal method; and though we have the splendid experience of Mr. Wells inducing him to advocate the clamp whenever it can be used, we have the greater success of Dr. Keith undoubtedly in support of the cautery. This important question can be settled by experience only.



Of the intra-peritoneal methods, there can be no hesitation in giving the preference to the short ligature, if tied as is shown in the annexed figure, and the ligature be of pure silk. If the pedicle be

* I have, however, successfully overcome this difficulty by devising the wire clamp described at p. 103.

broad it should be tied in one or more pieces, and the ligatures should be all within one another, like the links of a chain, to prevent slipping. If possible one of the stitches should pass through the stump and bring it up to the wound so that it may unite to the abdominal wall and not to intestine.

One case I treated by carbolized ligatures, and she died on the fifth day from pelvic peritonitis and suppuration. In one case, there was no pedicle, and I removed the tumor as well as I could, partly by the écraseur and partly by scissors, tying the bleeding points as I found them. This patient died on the fourth day. Any similar case I may meet with in future I shall treat by Dr. Miner's plan of enucleation. In two cases, I tied the pedicle with silver wire and dropped it back. Both these patients made excellent recoveries, and both carry their wire-rings to this day without inconvenience; and I think I may occasionally adopt this plan when I cannot use a clamp. In one case, I used the long ligature, and she died on the fourth day. She will be the last in whom I shall so treat the pedicle.

After the pedicle has been satisfactorily dealt with, the state of the peritoneal cavity ought to be the subject of the surgeon's attention; for it is certain that the careful removal of any clots or cystic fluid that may be there is very necessary for the success of the operation. Large flat sponges are best for this, and they should be stuffed well down into the pelvis and round into the lumbar regions, and left there for a few minutes. The operator should always know how many sponges are in use, and they should be counted before the wound is closed. Previous to this last step of the operation it must be carefully ascertained that the other ovary is healthy. If it be enlarged by cysts, it had better be removed; but if it contain only one or two small cysts, they may be opened and their contents pressed out.

Any tumor of the uterus had better be left alone, unless it be markedly pedunculated. If the uterus be found enlarged by pregnancy, it must be left alone; but if unfortunately punctured in mistake for a cyst, as has happened several times, the safest treatment is to lay it open and empty it, as was done successfully by Mr. Spencer Wells. The closure of the wound I usually effect by silk sutures passed by a handled needle; and, when a clamp has been applied to the pedicle, I pass the first stitch as a double thread immediately above the clamp, and fasten it at once. I always act on Mr. Wells's suggestion, and leave a sponge in the abdomen, just within the wound, until the other stitches are passed, and withdraw it before they are fastened. Care must be taken to include the peritoneum on both sides in the stitches, and to enclose no intestine or omentum in them, nor in the clamp. In fastening the deep sutures, the lips of the skin-wound must be carefully adjusted, and, if necessary, superficial sutures should be inserted. For the closed wound, a variety of dressings may be used, but there is nothing so good as dry lint. One of the secrets of success in ovariotomy lies undoubtedly in keeping the wound perfectly dry, and in removing, at the time of the operation, every drop of moisture from its lips and from the grooves of the stitches and clamp.

When dry lint, and plenty of it, is employed, the wound rarely requires to be dressed more than once in twenty-four hours, and, for cleansing it, some old linen or lint should be used without moisture. The wound generally heals by first intention, and the stitches may all be removed on

the tenth or twelfth day, except the one nearest the pedicle, which had better be kept in somewhat longer. The clamp generally comes away between the eighth and twelfth days, but its separation ought never to be hastened. In one or two cases where I have helped it a little, I have had reason to regret my haste in seeing the stump slowly sink downwards, keeping me in suspense for a few days as to whether or not the peritoneum would again be opened. When the clamp has come away, the dry lint dressings should be continued until the wound has healed, and the patient should be warned that the wound may open up slightly and discharge some menstrual fluid for a few months after the operation. In a case where I removed both ovaries and included both pedicles in one clamp, this after discharge did not occur. When the intra-peritoneal treatment of the pedicle is employed, the recovery is much more rapid, and I have seen one of my écraseur cases up and dressed on the eighth day, and she went home on the fifteenth day after the operation.

The after course of a case of ovariotomy is subject to many rude checks, which alter its history very much from the fortunate career supposed in the preceding sentences. There are many dangers in the path of every patient submitted to this operation, and there are many indications of their approach, but none so trustworthy as those derived from a close observation of the patient's temperature-curve. It should be the invariable practice of the surgeon to have a temperature observation of his patient made night and morning for a few days before the operation, and afterwards this ought to be repeated every four hours. Nothing has been to me more instructive than a comparison of a group of such charts; and I have repeatedly seen grounds for a prognosis in a case by the comparison of its temperature range with those of former cases. It will almost invariably be found that, immediately after the operation, the temperature falls considerably. I have seen it do so as much as two degrees, indicating the risk the patient has to run in the form of shock. To obviate this being carried to a dangerous extent, it is always well to place hot-water bottles to the sides and feet, and, if depression be severely marked, to administer a diffusible stimulant. By far the best is an enema of diluted champagne, with a little brandy. I make it a rule always to administer a small dose of morphia, a third or a fourth of a grain, immediately after the operation, by subcutaneous injection, and by this I believe I ward off shock in great measure, and prevent the after sickness which is often so distressing a condition. Since I have discontinued the use of chloroform, this latter accident has been almost entirely absent from my practice. From the twelfth to the twentieth hour after the operation, the temperature slowly rises, unless the patient succumb to the shock; or, in the still rarer condition, where the operation has had to be undertaken on an emergency due to cyst-inflammation or an attack of peritonitis, in which case the temperature falls. In a case of the latter, where I operated with a temperature of nearly 40 degs. centigrade, it fell in twenty-four hours to 37 degs.

After the recovery from shock, the patient generally breaks out into a gentle perspiration, and this should be slightly encouraged, and the temperature may vary from 36·8 deg. cent. to 38·5 without giving rise to any alarm. If it rise, however, above the latter point, especially if accompanied by an increased pulse frequency, dry tongue, pain, and inflation of the abdomen, green vomiting or hiccup, and anxious face, the access of peritonitis, in some form or other, may be taken for granted. The treatment of this must vary very much according to the circumstances of each case. Where I thought bleeding would be borne, I would not hesitate to put

two or three dozen leeches over the abdomen, or even to bleed from the arm. I have several times painted large surfaces with blistering fluid with most excellent effect, but my staple remedy is opium. This may be given either as laudanum by the mouth, or in a rectal injection or suppository, and is most useful in small doses frequently repeated. Some authorities recommend calomel and opium in pill at the onset of peritonitis, but usually there is too little time to afford delay for the action of such a remedy; and, if mercury is to be of any use, it must be given in the form of mercurial inunction. I have found a combination of opium and quinine of occasional service.

For the first twenty-four hours after an ovariotomy, I allow the patient no other sustenance than ice or iced water, and perhaps, in the case of sickness, a little soda-water and brandy, or champagne. Nutriment may be given cautiously on the second day in the form of chicken-broth or beef-tea, in small quantities frequently administered, so as to obviate vomiting. I seldom allow any solid food to be taken till after the fourth day, which seems to be a sort of critical time; and I have found fish, such as a plain boiled sole, to be the best form to begin with. After that time, more latitude of dietary is admissible, but always with the precaution that any fresh article is to be tried carefully in very small quantities, lest it be found to disagree.

During the second or third day we may find symptoms of exhaustion appearing in the form of restlessness, vomiting, and hiccup, sunken and pinched features, and frequent sighing. Under such circumstances, food and stimulants may be allowed more liberally, especially champagne with a little brandy in it; and very often great benefit may be derived from frequent small enemata of beef-tea and brandy.

In the event of the occurrence of symptoms of peritonitis, special interference may be requisite, such as opening the recto-uterine *cul-de-sac* from the vagina, for the purpose of draining any purulent or other fluid that may be collecting in the peritoneal cavity. Dr. Marion Sims has recently proposed to pass a drainage-tube in this way in every case of ovariotomy, before the closure of the abdomen, in order to prevent such collections. He is of opinion that they are the cause of the peritonitis, instead of, as it seems to me, the result; and though it is extremely probable that their evacuation may prevent subsequent purulent infection, yet the presence of a seton in the peritoneal cavity in every case of ovariotomy is far more likely to increase the number of cases of peritonitis than to diminish them. In none of the post-mortem examinations that I have seen of fatal cases of peritonitis after ovariotomy, could Dr. Marion Sims's suggestion have been of the slightest use in securing the escape of the effusion. In all of them the lymph and pus were out of reach of any tube which would pass between the parietal wound and an aperture in Douglas's pouch. I have tried the plan in one case, and have quite made up my mind not to make use of it again save under most desperate circumstances.

Septic poisoning is no more a peculiarity of the after course of a case of ovariotomy than it is of an amputation; but it seems an accident to which the former is liable with extreme readiness, if submitted to any sources of infection. It is generally ushered in by rigors, and is indicated by elevation of the temperature, a hay-like odor of the breath, with pain in and distention of the abdomen, beginning on the third or fourth day. Traumatic peritonitis begins within thirty-six hours of the operation, and is really a very rare complication.

If the septic infection take an acute form, a few hours may suffice to end the case. If it be of the subacute variety, it runs a longer course, and is more marked by nocturnal exaltation of the temperature-curve, night-sweats, diarrhœa, dry, brown and furred tongue, green or coffee-ground vomiting, hay-smelling breath, and tenderness over the liver; pneumonia often occurs in its course, and death usually takes place in four or five days. The chronic pyæmia, resulting in abscesses of joints, &c., is rare after ovariotomy; there seems not to be time enough for its development.

Vomiting is a frequent and often troublesome symptom after ovariotomy, and may arise from any of the complications I have mentioned. It is absolutely necessary to stop it, if possible, for I have seen the straining tear the wound open. There are many remedies that may be employed, as prussic acid, creasote, iced champagne, sinapisms over the stomach, &c.; but by far the most useful, in my experience, has been Morson's pepsine wine, given in drachm doses every ten minutes with a little ice-water. This has been especially beneficial in bilious vomiting.

Flatulence is often a very distressing symptom, and, if accompanied by a high temperature, is pathognomonic of peritonitis. Milk and lime-water often mitigates it very much, and the passage of an O'Beirne's tube as far as possible up the rectum will sometimes give much relief. An irregular menstruation comes on very generally within forty-eight hours after ovariotomy, and seems to be a good omen; for many of my cases where it has not occurred have died. It is often a source of alarm for the patients, and they ought always to be informed of the probability of its occurrence.

Inflammatory attacks in the chest sometimes set in during the convalescence after ovariotomy, and they are always sources of anxiety. After an operation in which a very large tumor has been removed, especially in a patient advanced in life, a short irritating cough is not unusually noticed in a few hours. This rapidly increases in severity, and I have seen it carry off a patient in thirty hours. It is evident that we have, in such cases, to deal with something very like the passive suffocative catarrh of old age. The expiratory muscles, probably the diaphragm chiefly, from long want of use have become atrophied, and, missing their *point d'appui* in the tumor, are unable to carry on the process of expectoration of mucus. It is one of the many reasons for preliminary tapping, that we may gain time for the muscles to recover their strength.

Acute pneumonia, bronchitis, and pleurisy are sometimes met with, and two of my patients have been nearly lost by the first of these complications. In one case, I hesitated for some hours as to whether I should not bleed from the arm; and, though the case recovered without it, I think the issue would not so long have been doubtful if I had bled her. The full administration of nutriment and stimulants is most to be trusted to, aided by the wrapping of the whole chest of the patient in jacket-poultices, with this necessary precaution—if once begun, they must not be left off until the crisis is over; and, in their use, it is most essential that in changing them the old poultice shall not be disturbed until the fresh one is ready for immediate application.

Diarrhœa may set in about the third or fourth day, and prove most irksome. It is often the indication of septicæmia, but more frequently it originates in some hard fæces lodged in the lower bowel. In the latter case, it is easily remedied by warm water enemata, followed each time by a morphia suppository.

Another complication has just occurred in my practice, whilst writing this, in the form of suppression of urine. The case was one in which there were no great difficulties, besides some adhesions in front. The pedicle was long, and was divided by the cautery. The urine became full of pus in about twelve hours, and intensely ammoniacal, rapidly diminished in quantity, and was wholly suppressed in twenty-eight hours. The patient died about thirty-six hours after the operation.

For three or four days after the operation, the patient should not be allowed to pass urine without the catheter, which ought to be used every six or seven hours. Great care must be taken to clean the catheter well after each time it is used, for it is not unusual to see severe cystitis set in from the introduction of an uncleaned catheter containing a drop of fœtid urine. If this accident should happen, its most appropriate treatment consists in the liberal administration of quinine, and the washing out of the bladder every six or eight hours with a weak solution of acetate of lead at a temperature of about 38 degs. Cent.

The intention of the use of the catheter is to keep the pelvis as quiet as possible, and for this purpose it is also well to administer occasional small doses of opium, to prevent any action of the bowel for seven or eight days, even though there be no pain to necessitate the opiate. In some cases, the bowels may remain without action for ten, twelve, or fourteen days after the operation without giving rise to any uneasiness. After such a time, the fæces which have collected in the lower gut may have become hardened; so that, when there does come on an inclination to have a motion, a small emollient enema ought to be given to facilitate its passage.

After the action of the bladder and rectum have been fairly established, the clamp loosened, and the wound healed, the further convalescence of the patient does not differ materially from that of one on whom any other serious operation has been performed. I have sometimes noticed a peculiar rapid emaciation, which comes on about the end of the second and beginning of the third week of recovery, which on one occasion, the first time I saw it, was a source of anxiety to me. After the wound has so far healed that it has begun to contract, the patient may be allowed to leave her bed for a little every day, and in due time to assume the erect position. There is one precaution always advisable—that the patient should wear a tight-fitting abdominal belt instead of stays; for, in spite of all care in inserting stitches to include all the layers, and to have immediate union of the abdominal walls, there is a proneness to the formation of ventral hernia in the cicatrix for many months after the newness of the union has passed off.

Sometimes we open the abdomen to remove an ovarian tumor, and find that we are unable to complete the operation. This happened to me early in my experience of ovariotomy, and the case was an instructive one in many respects. In May, 1868, I saw Mrs. H., in consultation with Mr. Kemp, of Castleford. She was thirty-seven years of age, considerably emaciated, had always menstruated regularly, had been married seven years, and was the mother of four children. About six months previous to my seeing her, she had noticed a lump in the left iliac fossa. This increased very rapidly, and, on her consulting Mr. Kemp, he diagnosed an ovarian tumor. The increase was so rapid, that he tapped her, removing a large quantity of clear straw-colored fluid; and I saw her seven days afterwards, when there was a considerable re-accumulation. Percussion elicited a perfectly dull note all over the abdominal wall, below a trans-

verse line passing an inch and a half above the umbilicus. Partly above this line, but mostly below it and to the right of the umbilicus, I felt through the thin parietes a floating tumor, about four inches in transverse and three inches in vertical measurement, which I believed to be secondary growth in the wall of the major cyst, the latter being regarded as unilocular. The uterus was normal in position and fairly mobile. She had a very well marked ovarian face and a shrunken dry skin.

I made the usual incision, but I had much difficulty in recognizing the peritoneum from the cyst-wall. I found that they were intimately adherent, and it was only by diverging a good deal to the right under the rectus muscle that I came upon a point of separation. Slitting open the peritoneum, I found that on the right side the tumor was free, and that I could readily reach the ovary and fundus uteri on that side. The ovary was healthy, but the uterus was tuberculated and somewhat fixed in front. I found that the cyst was adherent throughout to the left side and above the umbilicus, and that it had a long pedicle running from the left corner of the uterus into a firm mass at the brim of the pelvis. The flat floating tumor which I had felt near the umbilicus was a mass of soft cancer in the omentum. Long before I had made out these details, I had satisfied myself that the case was one of unilocular parovarian cyst, complicated by general cancer of the peritoneum; for all over the peritoneum of the pelvis, and less abundantly on the parietal peritoneum, and on the free cyst-wall, were scattered little flat and wart-like patches of a light pinkish-red color, and very friable. They did not bleed when torn in breaking down the adhesions. This process I only partially attempted, and soon desisted. I then emptied the cyst, and, finding its contents perfectly limpid, I removed a piece of it, so that its cavity should communicate with that of the peritoneum. This I did because the fluid in the peritoneum was darker and more dense than that of the cyst, and it seemed possible that the exhaustive process of tapping would not be so frequently required, if the effused ovarian fluid were drained into the peritoneum to dilute the denser liquid. I had to secure two large vessels in the parietal wound, and it was closed by silver wire sutures, after the cavity had been carefully sponged. I saw her ten days afterwards, and found that the wound had suppurated profusely, the two ligatures had come away, and that there was no re-accumulation of fluid in the peritoneum. The wound closed completely in three weeks, and she died a month afterwards from extension of the cancer, Mr. Kemp having written to me to say that the enlargement of the omental tumor had been most marked, and that there had been no re-secretion of fluid. We were not allowed to examine the body.

The piece of cyst-wall which I removed I placed in a one-per-cent. solution of chromic acid, and then examined thin sections of it, stained and unstained, to determine the character of the peritoneal patches.

I found that they were cellular throughout, and that the cells were more or less flattened, irregular, and of an epithelial character. The patches seemed to be continuous with the epithelial layer of the peritoneum, and, indeed, to be constituted by a malignant proliferation of the normal epithelial cells, many of which were evidently immaturely formed and abundantly intermixed with free nuclei. I could trace no vessels in the patches, which peculiarity would explain the absence of hæmorrhage when the adhesions of the tumor were broken down, these adhesions being evidently the coherence of opposing peritoneal surfaces by cancerous cell-growth. In some places, the patches, varying in size from a millet-seed

to a pea, had split on the surface, and presented a villous appearance. Occasionally, a patch undergoing fatty degeneration was found. Nowhere was any capsulation of the cells noticed, as is seen in skin-cancer, though otherwise the microscopic appearances strongly resembled those of ordinary epithelioma.

Besides the case narrated above, I have met with another, in which none of the ordinary signs were available for an accurate diagnosis, and where an exploratory incision was the only course. I am quite sure that each exploratory incision an ovariotomist makes gives him a great addition to his personal skill in diagnosis, and will lessen for the future of his practice the need of such a tentative measure. Not that I recommend all beginners to practise needless abdominal sections, but that, having carefully considered the propriety of an exploratory incision and performed it, the experience the operator has gained from it ought to assist him in avoiding its necessity in similar doubtful cases.

About three years ago, I saw Mrs. C., aged thirty-two, in consultation with Mr. Croft, of Snitterfield. She had a large abdominal tumor with the intestines above it and to each side, forming the characteristic ovarian coronal clearness of percussion. The tumor was fairly movable, and gave indistinct indications of fluid contents. It had no intimate relation to the uterus; it filled the pelvis, could be pushed upwards out of it, and extended three inches above the umbilicus. I saw her again in a month, when I found the tumor had much increased in size, and that some of the other conditions had been much altered. She was suffering a good deal, and we were anxious to relieve her. I expressed the opinion that the tumor was either a colloid semi-solid tumor of the ovary, or malignant cystic degeneration of the kidney. By none of the signs present could I determine which, for the tumor seemed to me much too pelvic to be a tumor of the kidney, and its relation to the intestines was indicative of an ovarian origin. Further, the history given, both by patient and by attendant, pointed to the right ovary as the seat of disease. There was, however, a fixity about its upper part that made me hesitate between the two alternatives and recommend an exploratory incision. As soon as the peritoneum was opened, the dull pinky-white color of the tumor decided me to the view that it was a case of cystic disease of the kidney; and, passing my hand into the pelvis, I found the uterus and ovaries healthy. The area of attachment of the tumor was the position of the right kidney, and of course I closed the wound at once. There was a considerable amount of ascitic fluid evacuated at the time of the operation. This never reaccumulated, and the patient lived nearly two years after the incision.

I have had two cases where I declined to attempt the removal of tumors diagnosed as ovarian, and where post-mortem examinations have justified my refusals and the grounds for them.

The first occurred in the case of a young woman of twenty-four years of age, in whom there existed a multilocular tumor, lying chiefly to the left side of the abdomen and fixed there. She gave a history which showed that, on three or four occasions, cysts had ruptured into the peritoneum, and that the rupture had been followed by some peritonitis on each occasion. She entreated that an operation should be attempted to relieve the sufferings she had to undergo on defæcation. I declined to attempt an ovariotomy, being quite certain that the tumor was so adherent as to render its removal an impossibility, and the contents of the cysts were found to be too viscid to be removed by tapping. She died during an attack of peritonitis due to the rupture of a cyst, which, on post-mor-

tem examination, was found to be adherent to the bladder. The tumor was also so intimately attached to the sigmoid flexure of the colon, some coils of small intestine, to the brim of the pelvis and to the bladder, that its removal would have been impossible.

Besides the operation for the removal of diseased ovaries, it may be necessary, in some rare instances, to discuss the propriety of removing the ovaries for other reasons than over-growth. Thus I have seen one or two cases where an ovary, displaced into Douglas's pouch, has become such a source of misery to a patient as to make her life a burden. The radical cure for such a case would be the removal of the organ, and in the event of the patient desiring the operation, after a clear understanding of the risks, I should be prepared to undertake it.

In cases of fibroid tumor of the uterus, where the hæmorrhage is uncontrollable and likely to prove fatal, and where it occurs with menstrual regularity and is not continuous, I should recommend removal of the ovaries for the purpose of stopping the hæmorrhage if the tumor itself could not be removed. We know that when the menopause has been reached, such hæmorrhages cease and the tumors do not grow further, and removal of the ovaries would imitate this physiological change. I have twice acted upon this principle, and though in both cases the operation was fatal, I should not be deterred from again advising it.

Phantom Tumor or Pregnancy.—I have placed this singular disease of the nervous system at the end of this chapter, because there can be no doubt that, whatever may be its mechanism, its immediate exciting cause is intimately associated with the ovaries; as, indeed, is the whole group of hysterical diseases of which it is one.

Simpson, quoting Harvey and giving also his own experience, tells us that symptoms such as we find in these cases are to be observed in cows and bitches; and doubtless if accurate observations were to be made on these animals so affected, some kind of explanation would be arrived at. That the symptoms are due to a perverted intelligence, or a mere desire to defraud, is not an explanation which would apply to many cases which have come under my own observation, and it could scarcely be urged in the case of animals. I have failed, however, to find that in cows or bitches any of the imitative symptoms have ever been observed; that is to say, such symptoms as distention of the abdomen do not occur. The signs of the spurious pregnancy in them consist in the reflex phenomena which accompany true pregnancy, and this points conclusively to some false start given to the reflex mechanism which connects the ovaries and uterus with their subsidiary organs and the system generally.

The great majority of cases of phantom tumor are really instances of spurious pregnancy incompletely developed; indeed, I am not quite sure but that every case really is so; those about which I have doubt being of a class which are certainly hysterical, which have no other sign than abdominal distention, and which seem to me perfectly analogous to cribbiting amongst horses. I have seen a sufficient number of these to be able generally to distinguish them as they enter the consulting-room, by the one sign which can always be heard, loud intestinal gurglings. These gurglings are due to the swallowing of air which the patient indulges in for a few minutes before she visits the surgeon, and she generally begins the consultation by attracting attention to them and to her large size. The increase in size is partly due to the spurious flatulence and partly to the peculiar muscular rigidities which these patients indulge in. If the patient is kept engaged in conversation for fifteen or twenty minutes,

without an opportunity of renewing her air supply, the gurglings will entirely cease and she will markedly diminish in size. Physical examination, especially under an anæsthetic, at once confirms the spurious nature of the abdominal distention. In these cases there is usually no attempt on the part of the patient to induce the surgeon to believe that she is pregnant, or even that she has a tumor, and the belief that a deliberate and voluntary fraud is intended is, I think, to be justified only in exceptional cases. The object seems really to be that of gratifying the insatiable love of attracting attention which is deeply rooted in the female mind, and which is at the bottom of ninety-nine cases of hysteria out of every hundred; and it must be borne in mind that this desire is characteristic of many forms of insanity in men as well as in women. The majority of cases of eccentric hysteria occur in women to whom nature has denied the external attractions of beauty, or in whom there is not the compensation of a refined and cultured intellect. It is therefore in neglected and ill-educated women that these objectionable forms of hysteria are chiefly to be met with. I have seen the kind I am now speaking of imitated by crib-biting mares and geldings very closely, the best instance having occurred in a mare. She was generally required to go out at a particular time of day, and as that hour approached, if she could succeed in getting a hold of any fixed object with her teeth, she would secure a quiet day in the stable by rendering herself quite unfit for work for many hours. She would swallow large gulps of air, so that the distention looked, to those unaccustomed to it, almost like the last stage of a peritoneal dropsy, and the intestinal gurglings could be heard at many yards distant. In a few hours she would be well again and ready for work; but nothing could prevent her succeeding in her trick unless care was taken to have nothing about upon which she could fix her teeth.

Women who indulge in this objectionable habit are nearly always sterile, though I can call to mind two cases in mothers of large families. It is by no means confined to any period of life, as I have seen it in very young and in very old women.

Between this group and those in which there is always present a distinct conviction that they have a tumor, there is no defined line, but they are generally women of the same type. They do not usually, however, have the gurglings, the distention being produced entirely by some peculiar muscular fixation, in which probably the diaphragm is the chief factor. In order to distend the walls of the abdomen, the first step is to fix the diaphragm at as low a level as possible; and after this is done, breathing can be carried on by the ribs alone. The time through which this kind of respiration can be employed is very brief in men, but is practically unlimited in women, owing to the peculiar superior costal method of breathing which exists in them. After fixing her muscles in this way, a woman has only to throw her shoulders back and her pelvis forwards, and if her clothes are loose she at once presents the appearance of pregnancy; and in these cases, if the confidence of the patient be sufficiently reached, it will always be found that there is either a hidden desire or a concealed dread of pregnancy. Generally, there is some little sign, or a group of symptoms, which gives coloring to the suspicion; such as morning sickness, pain in the breasts, flow of milk, or arrest of the menses; but in those cases where there is no expressed belief in the existence of pregnancy, the history of the symptoms given seldom leads up to that supposition, and the patients are generally very reticent in giving their own impression. Between this second group of cases and the third, in which I class

those in which the belief in pregnancy is expressed, and both its symptoms and signs given with more or less completeness and without hesitation, there is no well-defined distinction; for cases present themselves in which the condition is not sufficiently complete to place them under the heading of spurious pregnancy, and yet where there is evidently a belief on the part of the patient that there is something more than a swelling.

A well-marked case of spurious pregnancy, with its train of imaginary symptoms well described, and its reflex phenomena well developed, is one of the most singular experiences any one can have, and is most bewildering to those unaccustomed to physical examination of the pelvis. It is by no means confined to women at the climacteric, as many authors seem to have taken for granted without having properly analyzed the facts; and it is not even confined to married women, or such as have engaged in sexual functions without being married; for I have seen a very well-marked case in a young woman, twenty-two years of age, who presented all the usual and most trustworthy features of virginity.

There is some peculiar nervous machinery put in action the moment a fertilized ovum becomes attached to the uterine or tubal mucous surface, and that machinery sometimes gets a false start. How, we do not know.

One of the most perfect cases of phantom pregnancy or pseudocyesis (Goode) which I have ever met with, was one I saw in consultation with Dr. Charles Warden and Mr. Machin, of Erdington. The patient was thirty-two years of age, had been married eleven years, and had menstruated with perfect regularity until June, 1872. Menstruation was then suddenly and entirely arrested, she slowly increased in size, and had morning sickness and many other symptoms of pregnancy. The breasts enlarged, she described the sensations of quickening, and she engaged Mr. Machin to attend her in the confinement she expected in March. Nothing, however, came of it. When I saw her in the following May she presented all the appearances of being pregnant at the full time, the breasts containing quite an abundant supply of milk; and the question to be considered was, had she an extra-uterine pregnancy? As the uterus was perfectly normal, having no tumor of any kind in association with it, this suspicion was at once dispelled; and on placing her completely under the influence of ether, it became at once apparent that the pregnancy was a phantom. This ultimate test for pseudocyesis is one of the many triumphs of gynæcology due to the genius of Simpson.

VIII.—PELVIC BONES.

Diseases of the bones of the pelvis chiefly concern the province of the obstetrician, but occasionally the practitioner engaged in the treatment of those diseases of women which are not immediately associated with parturition has them brought under his notice.

I have already discussed the varieties of pelvic abscess and their general results; but there remains another, the least favorable of all except rupture into the peritoneum, by which the bones of the pelvis are laid bare and become necrosed. I need not speak here of the effects of psoas

or lumbar abscesses, as they lie more within the province of a general text-book on surgery; and in the majority of cases of their occurrence in women, they arise from causes quite independent of their sex. The pelvic abscess, arising from some affection of the special organs, which is most likely to affect the bones, is the parametric abscess situated in the outer part of the broad ligament. I have already described the usual seat of the opening of this abscess just above Poupart's ligament, and in this position it never affects the bones. But occasionally it finds its way to the surface further backwards, and opens on the crest of the ilium, in which event caries of the bones almost certainly results. In such cases, recovery is extremely protracted, and death is not an unusual ending of the prolonged suppuration. When a pelvic sinus has resisted all the ordinary constitutional remedies usually employed in cases of protracted suppuration, such as generous diet, tonics, especially quinine, removal to sea air, &c., then an effort to close the opening by drainage may be made. During the operation for the insertion of the tube, it may be possible to discover if there is any bare and diseased bone. If such be discovered, should any operative procedures be employed? I must say that I am very sceptical as to their utility. In one case I effected a very remarkable cure by opening the sinus so as to expose the diseased bone, which was just within the lip of the ilium, and touching it with crystals of chromic acid, taking full precautions at the same time that the action of the caustic was confined to the bone, and arrested immediately by the application of carbonate of soda. Some scales of bone separated, the sinus healed after having discharged for nearly two years, and the patient recovered perfectly. But for one case of this kind where interference is successful, many will be met with which are better left alone.

Tumors of the pelvic bones are very uncommon, for in a somewhat extensive experience I have met with only three cases. The first was a simple osteoma which had been known to exist for many years, and which had grown very slowly from the brim of the true pelvis, close to the right sacro-iliac synchondrosis. She had been for years under occasional observation by Simpson, and he had diagnosed the condition exactly. She died of phthisis, and after death we found the mass occupying about two-thirds of the pelvis, having pushed the organs over to the left. The woman had passed the climacteric period before I saw her, but she gave no history of menstrual derangement. She had never been married, and her chief distress arose from the interference with the bladder by the pressure of the tumor and from the neuralgic pains due to the same cause.

The other cases were post-mortem specimens; one of a cartilaginous growth, interspersed with irregular masses of bone, and which had not been diagnosed during life; the other was a malignant growth rising from the sacrum, the nature of which, in life, had been suspected.

The difficulty with such growths is, of course, to diagnose them from those for which surgical interference is adapted. From the nature of their attachments, they are of course fixed, and this of itself should always in a pelvic tumor be an intimation that excessive caution in interfering with it is advisable. The tumors which are more or less fixed, yet which may, under certain circumstances, be attacked with advantage, are hæmatoceles and pelvic abscesses. Of these, the histories and symptoms have been already discussed.

Pelvic deformities lie almost wholly within the province of the obstetrician, yet in one or two instances, notably in one case of hæmatocele in

an unmarried woman, I found that I had to take a pelvic deformity unexpectedly into account; for a hard mass which at first I suspected to be some part of an extra-uterine fœtus, turned out to be the promontory of the sacrum felt in the midst of a clot. This falling forwards and downwards of the sacral promontory is a characteristic feature of early rickets, and is therefore essentially an acquired deformity. In hospital practice I frequently encounter it, and am often amused at the wonder expressed by those unaccustomed to make vaginal examinations frequently, as to what it can be. As a rule, it is of course of no importance until the patient becomes pregnant; but its occurrence must be borne in mind, otherwise mistakes may be made, such as might have happened to me in the case referred to, had I not exercised patience.

DILATATION OF THE CERVIX UTERI BY CONTINUOUS ELASTIC PRESSURE.

Some months ago I succeeded in reducing a chronic inversion of the uterus by continuous elastic pressure, and I was so struck by the simplicity and painlessness of the process that I was induced to try it for dilatation of the cervix in cases where it was desirable to explore or necessary to operate within its cavity.

The results have been so satisfactory that I hasten to communicate them. It is needless to detail the cases, and I will refer to one only, that in which my process failed on account of retroflexion. The apparatus consists of a series of boxwood or ivory plugs of conical shape and varying in size. The smallest is two inches long, three-sixteenths of an inch thick at its rounded apex, and half an inch in diameter at its base. From its base a circular and upturned lip, three-eighths of an inch wide, runs round three-fourths of its diameter, the object of this lip being to prevent the plug being sent through the fundus, and the lapse in its circumference is to allow the forefinger of the operator to be in contact with the length of the plug during its introduction. The larger plugs do not require this lip. The largest plug is two and a half inches long, nine-sixteenths of an inch in diameter at its apex, and one inch at its base. Between these two sizes there are two others respectively half an inch and three-quarters thick at their bases, and a quarter of an inch and three-eighths thick at their apices. All these plugs screw on a common stem seven inches long and provided with several holes at the proximal end for the passage of the elastic threads. The patient is provided with a waist-belt of sticking-plaster to which strips of bandage are fastened in front and behind; a piece of elastic thread, one-eighth of an inch square in section, is run through one of the holes, and this is fastened to the two strips of bandage in such a way that it may be tightened or relaxed as may be thought desirable. The plug which is selected to begin the dilatation is then screwed on the distal end of the stem, smeared with vaseline and its apex is introduced into the os uteri. The threads are then to be tightened so as to exercise a *very gentle* pressure. In a few hours the first plug will be found buried to the hilt, and then the second must take its place and so on until the desired amount of dilatation has been effected. The only caution needed is to use a very gentle pressure, and the evidence of this

being done is that the patient is not in pain. It is extremely surprising how readily the cervix yields to pressure which appears to be wholly insufficient, and when I have used too much pressure, I have had a little trouble to get the plugs out on account of the cervix closing over them.

As I have said I have failed with them in one case only, where there was bad retroflexion, the failure being due to the fact that the pressure tilted the uterus still further back and forced the plug out. But I failed in this case with tents also, and finally I had to cut the uterus open. In another case of this kind I should place the plug on a soft metal stem, so that I could accommodate the axis of pressure to the axis of the uterus. The advantages of this plan over the use of tents are numerous. In the first place it is far more rapid, for dilatation, so complete that two fingers almost might be introduced into the uterus, may be accomplished in twelve hours. It is far less painful than the use of tents—especially of laminaria tents, which generally cause great pain and are not unfrequently the cause of most serious perimetritic mischief. The dilatation is more complete than with sponge-tents, for the fibres of the inner os seem to be so tired as to be incapable of contracting, as they often do on the removal of the tent, thus preventing the introduction of the finger. Further, the use of sponge for tents is always followed by the production of a terribly fœtid discharge, and this I have more than once seen to be the cause of fatal septicæmia. The plugs are entirely free from this objection.

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